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Archeological Test Excavations at Eight Sites in the Lake Sharpe Project Area of Hughes, Lyman, and Stanley Counties, South Dakota 1987

Main Report

Prepared by
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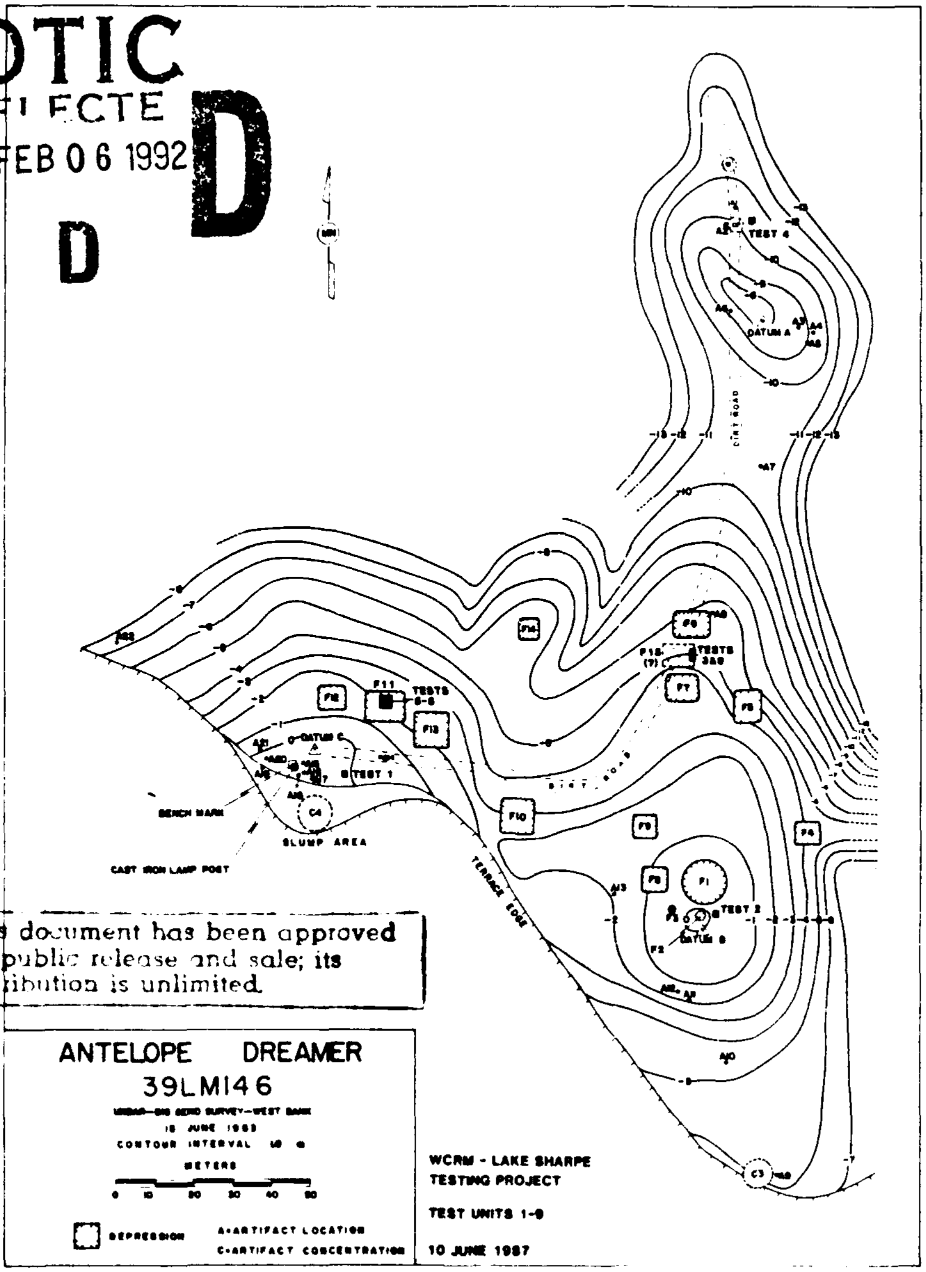
Boulder, Colorado



ARCHEOLOGICAL TEST EXCAVATIONS AT EIGHT SITES IN THE LAKE SHARPE PROJECT AREA OF HUGHES, LYMAN, AND STANLEY COUNTIES, SOUTH DAKOTA, 1987

by

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Western Cultural Resource Management, Inc.
Boulder, Colorado

submitted to

Department of the Army
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April 1990

Report submitted in partial fulfillment of Contract No. DACW45-87-C-0234 between the U.S. Army Corps of Engineers, Omaha District, and Western Cultural Resource Management, Inc., Boulder, Colorado.

This report is dedicated to the memory of

ROBERT ARTHUR ALEX

(1941-1988)

a friend and colleague in Middle Missouri archeology

whose good humor and insights will be missed by all.

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

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20. ABSTRACT (SHORT)

ABSTRACT (SHORT)

Test excavations were conducted at eight sites on the Missouri River in central South Dakota. Six sites were evaluated as significant and eligible for listing on the National Register of Historic Places, including: (1) the West Bend site (39HU83), an Extended Coalescent specialized activity location (ca. A.D. 1500-1675); (2) the Antelope Dreamer site (39LM146), an Initial Middle Missouri village (ca. A.D. 1270); (3) the Windy Mounds site (39LM149), two late Plains Woodland burial mounds (ca. A.D. 600-1000); (4) the Buzzing Yucca site (39LM166), an Extended Coalescent village (ca. A.D. 1500-1675); (5) the Ghost Lodge site (39ST120), a Post-Contact Coalescent village (ca. A.D. 1780); and (6) the Sitting Buzzard site (39ST122), a campsite or specialized activity location with Post-Contact Coalescent (ca. A.D. 1675-1780) and late Plains Woodland (ca. A.D. 600-1000) components. The Betty Bite Off site (39LM156) and the Cache site (39ST121) were not found to contain significant archeological deposits and they were evaluated as not eligible for listing on the National Register.

ABSTRACT (LONG)

Test excavations at the West Bend site (39HU83) revealed a primary component attributable to the Extended Coalescent variant (ca. A.D. 1500-1675), Plains Village tradition. The component functioned as an animal kill processing location and probably also as a location for the collection and processing of plant materials; a field camp function is also a distinct possibility. The West Bend site was evaluated as significant and eligible for listi on the National Register of Historic Places.

Test excavations at the Antelope Dreamer site (39LM146) identified a single component affiliated with the Initial Middle Missouri variant (ca. A.D. 1270), Plains Village tradition. The site represents a relatively large and extremely well preserved earthlodge village that functioned as a permanent residential base. The Antelope Dreamer village site was evaluated as highly significant and clearly eligible for listing on the National Register.

Investigations at the Windy Mounds site (39LM149) identified two human-made earthen mounds of the late Plains Woodland tradition (ca. A.D. 600-1000). There is every reason to believe that these mounds contain human burials. The Windy Mounds site was judged to be significant and eligible for listing on the National Register.

Investigations at the Betty Bite Off site (39LM156) failed to locate any specifically identifiable and therefore significant cultural deposits. The Betty Bite Off site was evaluated as insignificant and not eligible for listing on the National Register.

Test excavations at the Buzzing Yucca site (39LM166) confirmed the presence of a small earthlodge village and associated debris scatter affiliated with the Extended Coalescent variant (ca. A.D. 1500-1675), Plains Village tradition. The Buzzing Yucca site was evaluated as significant and eligible for listing on the National Register.

Test excavations at the Ghost Lodge site (39ST120) confirmed the presence of a small village with conical-type earthlodge structures affiliated with the Bad River phase, Post-Contact Coalescent variant, Plains Village tradition. The Bad River phase is linked to the historically known Arikara tribe. The site is thought to date to around A.D. 1780, and its occupation may relate directly to the 1780-1781 smallpox epidemic. The Ghost Lodge site was judged to be significant and eligible for listing on the National Register.

Investigations at the Cache site (39ST121) failed to reveal any evidence of substantial, intact archeological deposits. The Cache site was evaluated as insignificant and not eligible for listing on the National Register.

Work at the Sitting Buzzard site (39ST122) identified two significant components: (1) a Bad River phase (ca. A.D. 1675-1780), Post-Contact Coalescent, Plains Village tradition occupation; and (2) a late Plains Woodland occupation (ca. A.D. 600-1000). The Bad River phase component is thought to represent a special activity location, and the late Plains Woodland component could represent either a field camp or a station. The Sitting Buzzard site was judged to be significant and eligible for listing on the National Register.

ACKNOWLEDGMENTS

A number of individuals who contributed to the success of this project are owed special thanks. Richard Berg and Timothy Nowak, archeologists with the Omaha District Corps of Engineers, provided much needed assistance and advice throughout the course of the project. Tim's on-the-spot help with certain aspects of the fieldwork was especially appreciated. Bob Kindrick, then the Lake Sharpe Park Manager, was helpful in coordinating activities within the Lower Brule Sioux Reservation with tribal officials.

Jane G. Monson-Toom had the thankless task of performing most routine laboratory operations and preparing the final drafted figures from less than perfect field drawings. Thanks are also due Pat Hofer of the South Dakota Archaeological Research Center and John Rau of the South Dakota Historical Preservation Center for providing timely information and assistance on short notice.

Finally, special regard is due to the late Bob Alex, then the South Dakota State Archaeologist, who provided some helpful insights on Initial Middle Missouri ceramics in general and the ceramics from the Antelope Dreamer site in particular, and who also encouraged me in my endeavors into Middle Missouri archeology in South Dakota. Bob and I discussed the Antelope Dreamer material not long before his untimely death, which came as a great shock and sadness. It is with respect and admiration that this report is dedicated to his memory.

DLT, Grand Forks, ND
6 April 1990

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I. MANAGEMENT SUMMARY

Introduction

Archeological test excavations were conducted at sites 39HU83, 39LM146, 39LM149, 39LM156, 39LM166, 39ST120, 39ST121, and 39ST122 in the Lake Sharpe project area of central South Dakota during June of 1987 by personnel from Western Cultural Resource Management, Inc., Boulder, Colorado. This work was conducted under contract for the U.S. Army Corps of Engineers, Omaha District (Contract No. DACW45-87-C-0234). The primary purpose of the archeological testing project was to evaluate the eight sites in terms of their eligibility for listing on the National Register of Historic Places.

The West Bend Site (39HU83)

Eight 1 X 1 m test units were excavated to a maximum depth of 30 cm at site 39HU83, a part of the West Bend site complex (39HU83/231). The eight test units comprise a total of 2.4 m^3 of controlled excavation. The excavations yielded evidence of intact cultural deposits over a very broad area in the West Unit of the West Bend Recreation Area. It is estimated that about 25% of the site has been substantially disturbed by the construction of camping facilities; the balance of the site appears to be largely uncompromised by the presence of the campground. The only significant component recognized at the site is identified as a Plains Village tradition, Extended Coalescent variant (ca. A.D. 1500-1675) occupation on the basis of diagnostic artifacts (primarily ceramics).

The Extended Coalescent component at West Bend is interpreted as specialized activity location whose main function was the final processing of animal products from nearby kill/butchering sites. The collection and processing of wild plant resources was probably another activity carried out at the site. The structure of the site consists of more or less discrete clusters of artifacts representing a number of separate activity loci. This suggests that it was occupied only briefly on a number of different occasions over an extended period of time by several different Extended Coalescent task groups. These task groups were probably not large and they were probably operating out of nearby village sites. No evidence of the actual kill sites that were serviced by the West Bend site has been found in the immediate site vicinity. The primary quarry that was processed at the site was bison.

As a specialized activity location affiliated with the Extended Coalescent variant, site 39HU83 at West Bend was determined to have significant research potential. Its primary significance relates to providing additional information on Plains Village settlement-subsistence patterns during the final years of the local prehistoric period. Site 39HU83 is therefore considered to be eligible for listing on the National Register of Historic Places. While major impacts to the site have occurred as a result of the construction of the campground, impacts from its continued operation are relatively minor. We believe that the campground and the archeological site can coexist if expansion of the camping facilities is strictly prohibited within the site, and improvements of existing facilities are limited to

already built and disturbed areas. Other than taking appropriate preservation measures like those suggested here, no further work was recommended for the site.

The Antelope Dreamer Site (39LM146)

Nine 1 X 1 m test units were excavated to varying depths at the Antelope Dreamer village site. The volume of controlled excavation totaled 8.8 m^3. Three tests were individual 1 X 1 m units; two tests were combined to form a 1 X 2 m unit; and four tests were combined to form a 2 X 2 m unit. Tests 1, 2, and 4 were placed beyond the limits of visible house depressions to sample the extramural artifactual content of the site. Test 3 was also initially supposed to be an extramural test. It was placed between two obvious house depressions, but much to our surprise, Test 3 came down on the remains of an earthlodge that had no visible surface expression. This earthlodge was designated House 15 (or Feature 15). Test 3 was later expanded into a 1 X 2 m excavation into House 15 through the addition of Test 9. Tests 5-8 were combined to form a 2 X 2 m excavation into Feature 11, designated here as House 11, the remains of another earthlodge.

Analysis of diagnostic artifacts and a series of six radiocarbon dates indicates that the Antelope Dreamer village is a relatively late manifestation of the Initial Middle Missouri variant (ca. A.D. 1270) of the Plains Village tradition. Affiliation with the Grand Detour phase is suggested. The site clearly functioned as a permanent residential base for a rather large group of Initial Middle Missouri villagers. The village does not seem to have been occupied for any considerable length of time judging by the low extramural artifact densities and the apparent absence of any extramural midden accumulation. Subsistence at the site reflects a mixed economy based on hunting, gathering, and horticulture. Both plant and animal resources were used for food and as sources of raw material for the manufacture of tools, facilities, and other items. Exploited animal resources include various species of both large and small mammals; bison appears to have been the preferred quarry. Fish and shell fish are present as minor subsistence elements. An impressive variety of plant resources was also used at the site, including a number of wild and domesticated species. Identified cultigens include corn and certain species of sunflower.

The really unusual aspect of the Antelope Dreamer site is its setting. The placement of a permanent residential base (an earthlodge village) in the higher elevations of the Missouri Breaks zone well away from easily accessible sources of clean water and essential bottomland (floodplain) resources is anything but typical. Taking into account its relative inaccessibility and full view of the surrounding area, the site is situated in an obviously superior defensive position. The establishment of the village on a high bench surrounded by rugged terrain at some distance from critical resources suggests that defensibility was the primary locational consideration. In fact, the location of a village of its size and complexity in such an inhospitable setting is virtually unique in the Middle Missouri subarea. All things considered, what we seem to have here is a strong indication that the occupants of Antelope Dreamer were under considerable pressure from potentially hostile groups of people who also occupied the area, either intermittently or on a permanent basis. Just who these hostile groups might

be is difficult to say, but one can speculate that only other Plains Villagers (possibly Initial Coalescent variant peoples) would have been a serious threat to the occupants of Antelope Dreamer.

The Antelope Dreamer village is without question a highly significant archeological resource. It is clearly eligible for listing on the National Register of Historic Places. The site has not been impacted to any appreciable degree by modern development, and it remains in essentially pristine condition. Our only recommendation is that it should be maintained in this excellent state of preservation.

The Windy Mounds Site (39LM149)

Three 1 X 1 m test units were excavated to a depth of 50 cm at the Windy Mounds site. The volume of controlled excavation for the site totals 1.5 m^3. Tests 1 and 2 were placed in the outer margins of Mounds 1 and 2, respectively. A small uncontrolled excavation or "sounding" was dug an additional 30-40 cm beneath the base of Tests 1 and 2 to provide better stratigraphic definition once the mound and submound stratigraphic units had been penetrated. Test 3 was placed approximately 20 m to the northwest of the mounds in a flat area of the ridge-top.

Combined geological and archeological evidence indicates beyond all reasonable doubt that the mounds at site 39LM149 are human-made features. The recovery of the a late Plains Woodland arrow point (Prairie Side-Notched type) from the former ground surface just beneath Mound 2 demonstrates a late Plains Woodland cultural affiliation. A construction date of A.D. 600-1000 is suggested for the mounds based on the estimated age of the point type (ca. A.D. 800) and the late Plains Woodland time frame in the project area. The actual presence of human burials beneath the mounds was not confirmed, but there is every reason to believe that such interments do exist because Plains Woodland mounds in the study region invariably functioned as tumuli.

The Windy Mounds site is evaluated as eligible for listing on the National Register of Historic Places. The site is in generally good condition, and it is not presently threatened by any major impacts. The two mounds have been impacted to some extent by a two-track dirt road that runs through the site and between the mounds, an old excavation into the center of one of the mounds, and the limited test excavations reported here. While the integrity of Mound 2 may have been compromised to an unknown degree by the old excavation into its center, Mound 1 remains virtually untouched and in excellent condition. We recommend that the site be maintained in its present condition. Vehicle traffic into the site should be restricted.

The Betty Bite Off Site (39LM156)

Three 1 X 1 m test units were excavated at Betty Bite Off into and through the buried cultural horizons. Tests 1 and 2 were combined to form a 1 X 2 m excavation that was placed near the Lake Sharpe cutbank where scattered artifacts exposed in the cutbank appeared to be the most numerous. It was thought that a 1 X 2 m excavation at this location would provide maximum

artifact recovery. Tests 1-2 were excavated to a depth of 130 cm. The cutbank opposite Tests 1-2 was also cleaned and profiled down to the beach level of Lake Sharpe. No attempt was made to recover artifacts from the profile excavation, designated Bank Profile 1. Test 3 was placed approximately 35 m to the west of Tests 1-2 so as to explore the artifactual content of the site away from the cutbank exposure. Test 3 was excavated to a depth of 90 cm sd. Excavated volume at the site totals 3.5 m^3.

The edge of the Lake Sharpe cutbank was remapped at the site in order to determine the extent of recent cutbank erosion. This exercise revealed that as much as three meters of the cutbank had been lost to erosion in the four years since the site was first documented (1983) and these investigations (1987). Recent cutbank erosion was most extensive in the lower part of the site just upstream from the mouth of a small bay. Unfortunately, this is also the part of the site where artifact densities would seem to have been the highest.

It was not possible to positively assign the ceramic (late prehistoric) period components at the Betty Bite Off site to any definitive archeological taxa. It is thought that the site contains early and late Plains Village (i.e., Initial Middle Missouri and Extended Coalescent) components, that most likely functioned as specialized activity locations, but this could not be confirmed by the meager data that were generated by this testing effort. The available evidence also indicates that much of the site has been destroyed by erosion, particularly those areas that once exhibited the highest diversity and density of artifactual materials. The inability of these investigations to link the late prehistoric components at the site to defined archeological taxa further depreciates their research potential. Therefore, on this basis, the site and its components are evaluated as not eligible for listing on the National Register of Historic Places. No further work is recommended, except to suggest that the continued erosion of the cutbank at the site could be monitored periodically to check for the exposure of any substantial cultural deposits that might be present at the site and were not encountered by the testing reported here.

The Buzzing Yucca Site (39LM166)

Eight 1 X 1 m test units were excavated at the Buzzing Yucca site to varying depths, into and through the Extended Coalescent occupation zone. A total of about 2.75 m^3 of controlled excavation was completed at the site. Tests 1 and 2 were combined to form a 1 X 2 m excavation into Feature 5, herein designated House 5, the remains of a circular earthlodge. Tests 1-2 were placed over the center of the house depression where hand coring indicated the central hearth was located. No other test units at the site were combined into larger excavations. Test 6 was placed near the center of Feature 6 (House 6) where hand coring also indicated a hearth was present. The hearths in these two earthlodges were specifically targeted for excavation because of their potential to yield significant quantities and types of artifacts and ecofacts. Hand coring of Feature 7 (House 7) was once again inconclusive, primarily because of extremely hard soil conditions. It was decided that Feature 7 would not be tested in view of the results of the hand coring and the need to spread the remaining test units over a sizable site area. The remaining five test units were distributed about the site area in

order to provide some data on the artifactual content and stratigraphy of extramural contexts at the site. Test 3 was placed just beyond the depression of House 5 to examine an extramural context near a confirmed house. The other four extramural tests were placed well away from house areas. The smaller surface features recorded at the site (F1-4) were not tested to expressly avoid disturbance to any human burials that might be present.

The Buzzing Yucca site is interpreted as a permanent residential base (an earthlodge village) for a small group of Plains Village people affiliated with the Extended Coalescent variant (ca. A.D. 1500-1675). Another Extended Coalescent village (39LM206) was recorded by the SIRBS just to the northwest of Buzzing Yucca near the former mouth of Cedar Creek. The village occupation at site 39LM206, which is now completely inundated by Lake Sharpe, may have been related in some way to that at Buzzing Yucca. The Buzzing Yucca village component does not seem to have been occupied for any considerable length of time judging by the overall low artifact densities and the apparent absence of any appreciable extramural midden accumulation. The limited number of technological and functional forms in the stone tool sample, combined with the relative abundance of ceramics, suggests that the site may have served some specialized purpose, perhaps related to ceramic manufacture. The site could also just as readily represent a small but "typical" Extended Coalescent residential base, which only seems to have had a specialized function due to sample biases resulting from the limited extent of the excavations reported here.

The few subsistence data that are available from the site reflect a mixed economy based on hunting, gathering, and horticulture. Both plant and animal resources were used for food and as sources of raw material for the manufacture of tools, facilities, and other items. Exploited animal resources include various species of both large and small mammals; bison appears to have been the preferred quarry. Shell fish (mussels) are present as a very minor subsistence and/or technological resource. The plant resources used at the site consist of both wild and domesticated species. The only positively identified cultigen is corn.

The Buzzing Yucca site clearly has significant research potential and it is judged to be eligible for listing on the National Register of Historic Places. As a permanent residential base (village), there is no question that the site has a demonstrated potential to generate information of importance to enhancing our understanding of most any aspect of Plains Village lifeways. The site is essentially stable and has not been impacted to any appreciable degree by modern development. The only impacts that can be noted are some minor erosion along the shoreline, which does not appear to be active owing to the presence of Pierre Shale bedrock, some deflation of the debris scatter in certain places as a result of surface erosion, and our limited archeological excavations. Other than these rather minor impacts, the site remains in excellent condition and will probably continue to do so into the foreseeable future. Our only recommendation is that the site should be maintained in its present condition.

The Ghost Lodge Site (39ST120)

Eight 1 X 1 m test units were excavated to varying depths at the Ghost Lodge site in both intramural and extramural contexts. Four tests were individual 1 X 1 m units placed in extramural contexts. Three of these extramural tests (Tests 1, 2, and 7) were distributed about the eastern site area; the fourth (Test 8) was placed in the western part of the site. The other four test units (Tests 3-6) were combined into a 1 X 4 m excavation that was dug across the center of Feature 2 (House 2) where hand coring indicated the presence of a hearth. Test 7 was located in the vicinity of the presumed house depressions so as to evaluate the artifactual content of extramural contexts near the houses. The other extramural tests were placed well away from the recorded depressions. The primary purpose of Test 8 was to evaluate the content of extramural contexts in the western part of the site, especially the buried soil horizon observed in the western cutbank. It was not possible to work directly in either the eastern or western stream cutbanks because of their height and instability.

The village component at Ghost Lodge seems to defy a conventional interpretation because the results of the test excavations reported have raised more questions than answers. We do know that this component represents a short-term occupation by a relatively small group of Post-Contact Coalescent villagers affiliated with the Bad River phase. The protohistoric Bad River phase is directly linked to the historically known Arikara tribe, so the occupants of the village component at Ghost Lodge were in all probability members of an Arikara band. Radiocarbon dates, comparative artifactual analyses, and other temporal-cultural information indicate a date of occupation during the late A.D. 1700s, possibly during or immediately following the A.D. 1780-1781 smallpox epidemic.

A standard interpretation of the data suggests that the village component functioned as a semipermanent Arikara field camp. The houses at the site are definitely not like the large, substantial earthlodges that are typically found at permanent Arikara village sites. Rather, the dwellings at Ghost Lodge appear to be small, semipermanent structures similar to the conical earthlodges or hunting lodges reported at the Fire Heart Creek site, which is interpreted as an Arikara hunting camp. This architectural association immediately suggests that the Ghost Lodge village functioned as a semipermanent hunting camp or, in the terminology used here, a field camp. However, the low density of bone debris at the site does not support a hunting camp interpretation.

Nevertheless, the village probably did function as some sort of temporary residential base for a small group of Arikara. One can only speculate as to why such an occupation was established at this location. The estimated date of occupation encompasses the well documented smallpox epidemic of A.D. 1780-1781, which had a particularly disastrous impact on the Post-Contact Coalescent villagers, including the Arikara of the Big Bend region. The severe inroads of this epidemic on the Arikara population base forced the to survivors to abandon the Big Bend region and withdraw up river to the Bad-Cheyenne region where they established two villages with other surviving Arikara near the mouth of the Cheyenne River. It is entirely possible that the temporary village at Ghost Lodge was occupied by remnants of the Big Bend Arikara just prior to their removal upriver, since the available data do not

appear to support an occupation by a special-purpose task group. The degenerative form of chipped stone tool technology that is inferred for the component, as well as the overall poor quality of the ceramic remains, would seem to lend further credence to a post-epidemic occupation.

The Ghost Lodge site is undoubtedly eligible for listing on the National Register of Historic Places as a potentially unique and highly significant archeological resource. It is possible that research into the impacts of the smallpox epidemic of 1780-1781, an event that was of singular significance in regional native history, could be productively pursued at this site.

The bench in which the Ghost Lodge village is situated is being severely undermined by active subsurface erosion (tunnel gullying). Some lateral erosion of the bench is also occurring along intermittent stream channels that border the site on two sides, but the really adverse impacts to the site itself are from the extensive tunnel gullying in the bench. At least one house depression has already been more or less destroyed by this process, and the remaining structural features are clearly threatened. We believe that if this process of erosion continues unabated, the site could be essentially destroyed in a matter of years. Therefore, a high priority program of salvage excavation is recommended for the site to mitigate present and future erosion impacts before the site is substantially destroyed.

The Cache Site (39ST121)

An inspection of the Lake Sharpe cutbank at the Cache site prior to testing revealed that the stratigraphic sequence containing the potential cultural horizons recorded by UND in 1983 is no longer in existence. A comparison of photographs of the cutbank exposure in 1983 (UND) and 1987 (WCRM) clearly shows that the area identified by UND, including the location of Feature 1 (a lithic cache), has been completely destroyed by recent gully cutting in the flat accompanied by lateral cutbank erosion. The Lake Sharpe cutbank at the site was remapped as part of these investigations, indicating that anywhere from 3-4 meters of the cutbank has been lost to erosion in the four years since the discovery of the site and the investigations reported here. An inspection of the surface of the site also failed to reveal any definite artifactual remains.

Testing at the site consisted of the excavation of two 1 X 1 m test units. Test 1 was placed on the small knoll located approximately 25 m to the south of the present Lake Sharpe cutbank where the UND survey team reported eroding bone. Test 2 was located near the edge of the cutbank in an intact portion of the low-lying flat, the topographic setting which contained the possible cultural horizon(s). Testing directly opposite the former location of the buried horizons reported by UND was not feasible because of the recent gully cutting in this part of the site. Test 1 was excavated to a depth of 70 cm into a clayey subsoil. Test 2 was excavated to a depth of 40 cm where a similar soil was encountered. Excavated volume for the site totals 1.1 m^3.

The archeological investigations conducted at the Cache site failed to reveal any evidence of substantial, intact archeological remains. By all indications, the cultural materials observed in the Lake Sharpe cutbank during the 1983 UND survey have been completely destroyed by shoreline erosion. The

Cache site is, therefore, evaluated as not eligible for listing on the National Register of Historic Places. No further work is recommended.

The Sitting Buzzard Site (39ST122)

Six 1 X 1 m test units were excavated to varying depths at the Sitting Buzzard site, yielding a total of 4.1 m^3 of controlled excavation. As it turns out, all of the test units were placed in extramural contexts. Test 1 was located in the center of Feature 1, a presumed earthlodge depression, which actually proved to be a natural feature. The other five tests were dispersed throughout the rest of the site area. None of the test units at Sitting Buzzard were combined into larger excavations.

Significant archeological components identified at the Sitting Buzzard site include brief occupations by small groups of people affiliated with (1) the Plains Village tradition, Post-Contact Coalescent variant, and (2) an unnamed manifestation of the late Plains Woodland tradition. The Post-Contact Coalescent component is linked to the Bad River phase (protohistoric Arikaras). The limited technological diversity exhibited by the artifact samples suggests these occupations served some special purpose or function. Available data are insufficient to positively assign the site components to recognized settlement types. The Post-Contact component could represent either a field camp or a location (specialized activity area). The late Plains Woodland component may have been a field camp or a station (information gathering site).

Both the Post-Contact Coalescent and the Late Plains Woodland components at the Sitting Buzzard site are evaluated as eligible for listing on the National Register of Historic Places. These components have the potential to yield information of importance to the reconstruction of Plains Woodland and Plains Village lifeways. The late Plains Woodland component at the site also offers a rare opportunity to increase our presently limited understanding of local and regional culture history with respect to the Plains Woodland tradition. The site area is presently unstable and subject to both subsurface (tunnel gullying) and lateral (cutbank) erosion. A high priority program of salvage excavation is recommended to mitigate the present and future impacts of erosion on the site and its significant components.

II. INTRODUCTION

Project Background

In February 1987, Western Cultural Resource Management (WCRM), Inc., Boulder, Colorado, received Solicitation No. DACW45-87-R-0005, dated 18 February 1987, from the U.S. Army Corps of Engineers (USACE), Omaha District (Appendix O). The solicitation and accompanying scope of work (SOW) called for a proposal for the testing and evaluation of eight archeological sites located in the Lake Sharpe project area in Hughes, Lyman, and Stanley counties, South Dakota (Table 1; Figure 1). The Lyman and Stanley county sites are reported in Toom and Picha (1984). The single Hughes County site is considered in Falk (1984) and Steinacher and Toom (1985).

In essence, the SOW requires that a specified number of 1 X 1 m test units to be excavated to a designed maximum depth at each site identified for testing (Table 1). Radiocarbon samples, flotation samples, and pollen samples were to be collected during the course of the excavations. Flotation and pollen samples were to be taken specifically from all excavated features. All recovered artifactual and ecofactual remains were to be retained, processed, cataloged, analyzed, reported, and eventually placed in an acceptable South Dakota curation facility. Only "diagnostic artifacts" were to be collected from the surface of the sites. Any modifications of this basic work plan were to be made in consultation with the USACE technical officer.

The primary management goal of the required testing is to assess the eligibility of each site for nomination to the National Register of Historic Places. In this regard, information was to be collected for each site concerning its cultural affiliation, function, horizontal and vertical boundaries, integrity, and research potential. Nomination forms were to be prepared for each site considered to be significant and eligible for listing on the National Register. Scientific research goals to be addressed by the project were to focus on topics raised in Buechler (1984) and Falk (1984) which are appropriate to this level of investigation and compatible with the acquired data sets. In addition, a journal article suitable for publication was to be prepared on the results of the project, as was a brief public education program.

In response to this solicitation, WCRM prepared a proposal following specifications outlined in the SOW (Appendix O). The proposal was submitted to the USACE in March 1987; on 22 April 1987, the contract for the testing project was awarded to WCRM (Contract No. DACW45-87-C-0234). Work on the literature and records search phase of the project was conducted during May 1987. Preparations for the fieldwork phase of the project were also made at this time. Fieldwork was begun on 1 June 1987, with most all field activities completed on 1 July 1987. All project-related materials and records were then transferred to WCRM archeological laboratory facilities for analysis, records management, and report preparation activities. In August 1988, the principal investigator (Dennis L. Toom) moved to Grand Forks, North Dakota to join the research staff in the Department of Anthropology, University of North Dakota (UND). Project records and collections were transferred to UND archeology laboratory and office facilities in Babcock Hall at this time under

Table 1. Summary Information on the Eight Sites Scheduled for Testing, Lake Sharpe Testing Project, WCRM, 1987 (abstracted from the USACE SOW, Appendix O; additional information for 39ST122 taken from Toom and Picha 1984).

Site Number	Description	Suggested Taxonomic Affiliation	No. of Test Units*	Maximum Depth (cm)
39HU83	Artifact Scatter	Plains Village, Initial Coalescent Plains Woodland (?)	8	30
39LM146	Earthlodge Village	Plains Village, Initial Middle Missouri (?)	8	120
39LM149	Mounds (?) Rock Forms Lithic Scatter	Plains Woodland Historic Prehistoric	4	50-100
39LM156	Buried Horizons Dugout Depression	Prehistoric Historic	3	110
39LM166	Earthlodge Village Dugout Depressions	Plains Village, Extended Coalescent Historic	8	75
39ST120	Earthlodge Village Buried Horizon	Plains Village, Variant Unknown Prehistoric	8	100
39ST121	Buried Horizon Buried Horizon	Plains Village, Initial Coalescent (?) Prehistoric	2	160
39ST122	Earthlodge or Campsite Buried Horizon	Plains Village, Unknown Variant Prehistoric (Late Plains Woodland?)	6	120

*Test units are 1 X 1 m excavations.

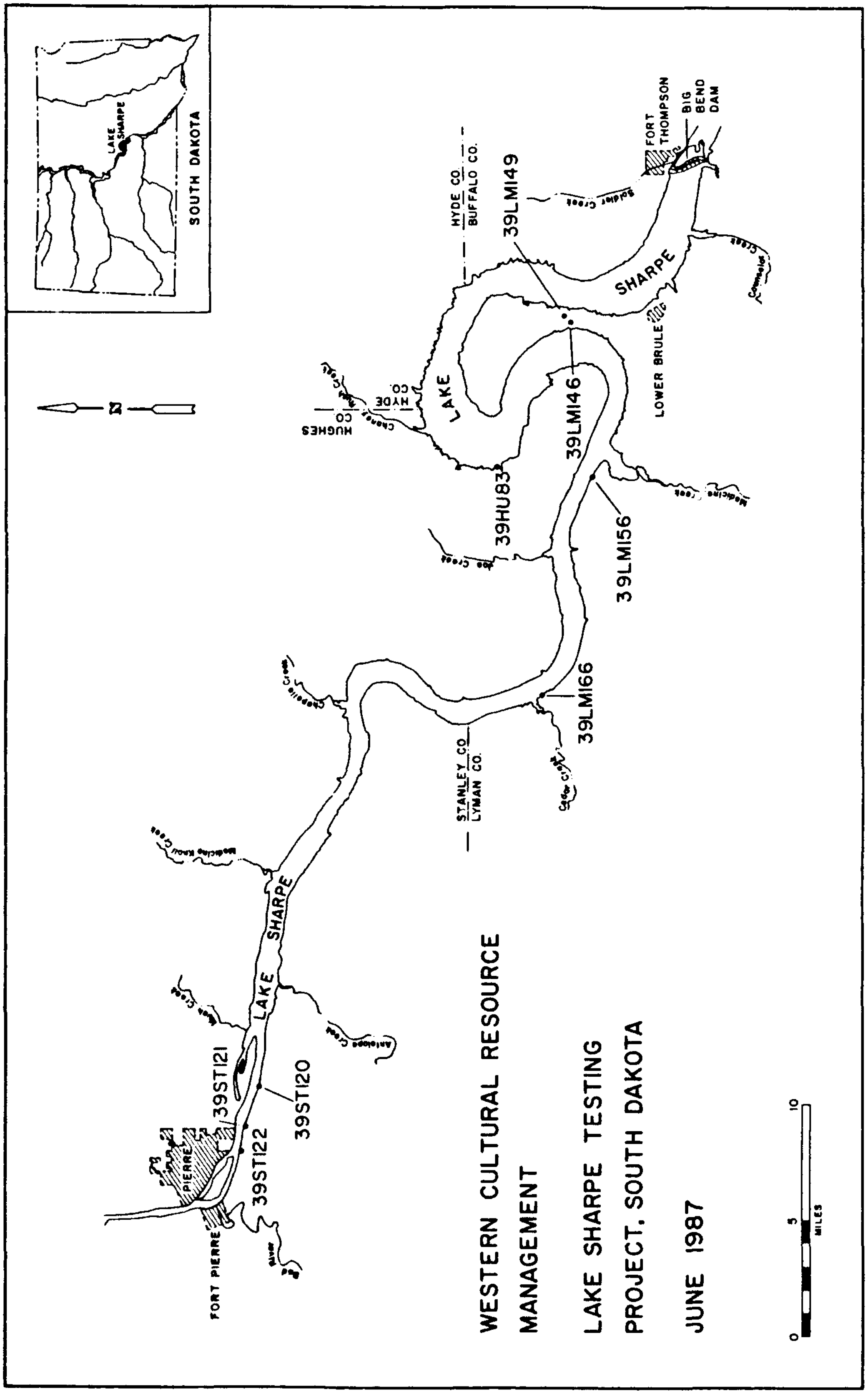


Figure 1. Map of the Lake Sharpe Project Area Showing the Locations of the Eight Sites Identified for Testing.

Toom's supervision with the consent and approval of WCRM management. This transfer was necessary to enable Toom to direct the completion of the project while at UND.

Area Definitions

Three geographic areas are especially relevant to this testing project: (1) the Lake Sharpe project area, (2) the Big Bend study unit, and (3) the Middle Missouri subarea of the Plains, the study region. Each of these areas is described in some detail below to enable the reader to better place the results of the project within the proper cultural-geographic perspective.

Project Area

The Lake Sharpe project area corresponds to the USACE Big Bend Dam and Reservoir (Lake Sharpe) located on the Missouri River between Ft. Thompson and Pierre, South Dakota (Figure 1). The project area includes all federal land administered by the USACE as a result of the construction of Big Bend Dam and the impoundment of Lake Sharpe. The project area is also referred to as Big Bend in certain other reports (e.g., Steinacher 1981; Toom and Picha 1984; Steinacher and Toom 1985) because this is more in keeping with past historical and archeological referents to the area. Delimiting the project area is important since most detailed descriptions and comparisons will be restricted to it. It is also a convenient areal delimitation from the perspective of the Corps because most cultural resource management decisions ultimately relate directly to their individual project areas (i.e., dams and their lakes or reservoirs).

Study Unit

Definition of a study unit is important because they are often used as interpretive or management devices that measure and guide the progress of archeological research in areas containing unique or spatially restricted cultural sequences. The project area is contained in two study units defined in the working draft of the *Management Plan for Archaeological Resources in South Dakota, Part I: Study Units* (Buechler 1984). This plan was developed under the guidelines of the Resources Protection Planning Process (RP3) of the U.S. Department of the Interior. The Lake Sharpe project area straddles the Bad/Cheyenne and Big Bend study units, as delimited in the South Dakota RP3 document (Buechler 1984:3). Upstream portions of the project area in Hughes and Stanley counties are located in the Bad/Cheyenne study unit; downstream portions in Hughes, Hyde, Buffalo, and Lyman counties are situated in the Big Bend study unit (Figure 2). The USACE SOW (Appendix O) states that the Big Bend study unit will be used to guide the general research orientation of the project reported here, even though the sites under study are actually located in both the Big Bend and the Bad/Cheyenne study units. However, this will not affect the conduct of the project because the research orientations of these two adjacent study units are not materially different.

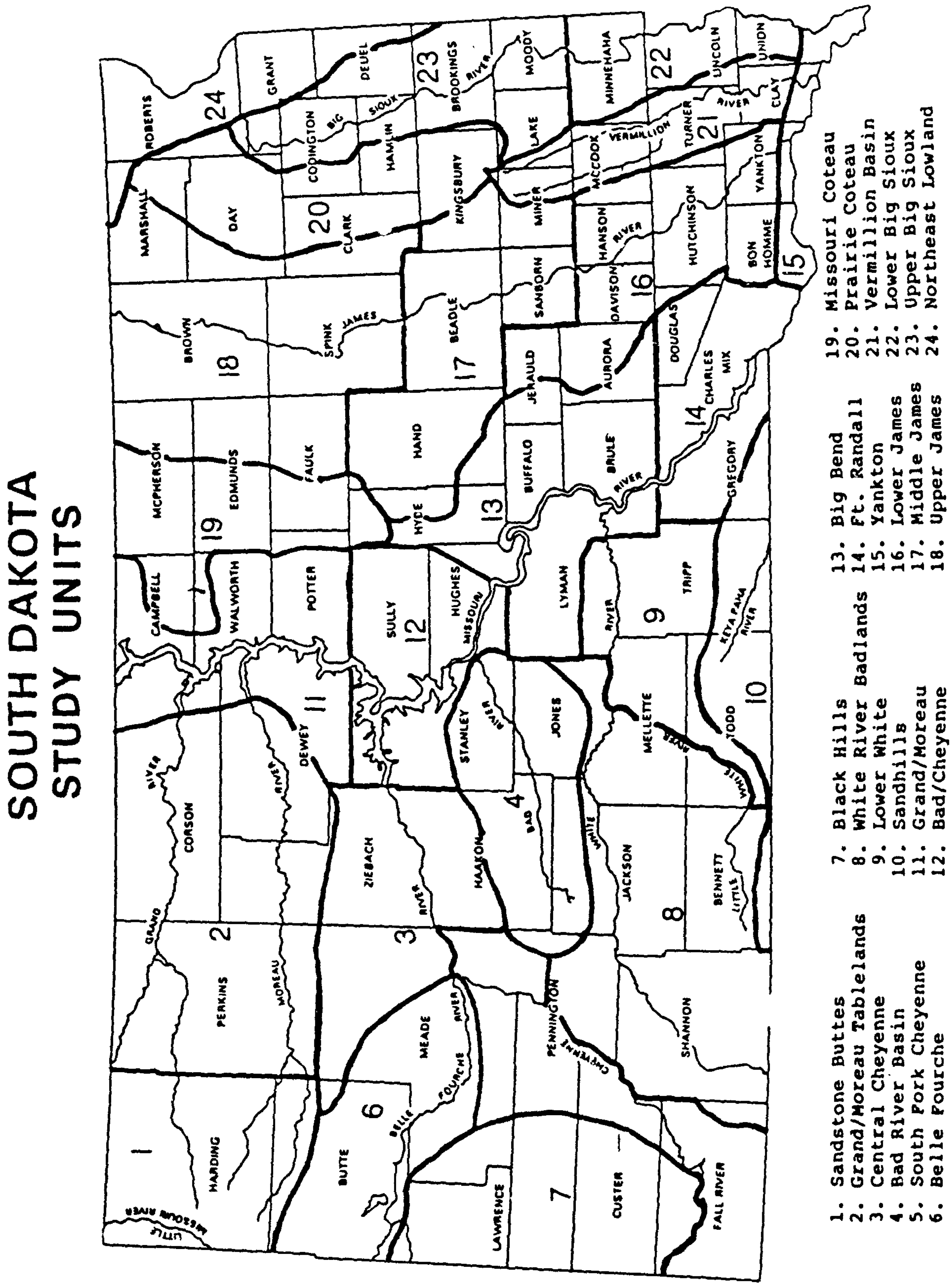


Figure 2. Map of the South Dakota RP3 Study Units (from Buechler 1984:3).

In recognition of previous areal subdivisions of the archeology of the Missouri River trench in the Dakotas, it is important to note that the Lake Sharpe project area is also contained within the upstream portion of the Big Bend region of the Middle Missouri subarea (Figure 3), as originally defined by Lehmer (1971:29). Lehmer's regions of the Middle Missouri (Figure 3), which are conceptually comparable to the study units of the RP3, have gained wide use and acceptance in the archeological literature. They are characterized by more or less unique archeological sequences of specific relevance to Middle Missouri prehistory and history, especially with regard to the Plains Village tradition, and they are intended to serve as devices for integrating archeological data in the development of a comprehensive culture history for the subarea as a whole. Consequently, the Big Bend region of the Middle Missouri subarea is also germane to archeological research in the Lake Sharpe project area.

Study Region

The study region, the largest area to be considered, is the Middle Missouri subarea of the North American Plains culture area (Lehmer 1971; Scaglion 1980; Wedel 1961) (Figure 4). The Middle Missouri subarea of the Plains contained different cultural groups with distinctive traits at various times in the past, yet this overall cultural diversity was characterized by considerable periods of basic cultural similarity and continuity. These factors make the Middle Missouri a useful areal delimitation for both archeological and ethnographic research, hence, a cultural subarea of the larger Plains culture area. Delimiting the study region is also important because it sets the bounds within which larger descriptions and comparisons will be made. Only rarely will it be necessary to go beyond the Middle Missouri subarea for such purposes.

Project Personnel and Contributors

Mr. Dennis L. Toom (M.A. anthropology) served as the principal investigator and project director during the entire course of the testing project. Toom is presently a Ph.D. candidate in the Department of Anthropology, University of Colorado, Boulder. In addition to his other duties, Toom was also the project geoarcheologist. Dr. Timothy G. Baugh (Ph.D. anthropology) was the co-principal investigator and co-project director until his resignation shortly after the completion of fieldwork. All fieldwork was performed under the direct supervision of Toom and Baugh. Field assistants for the project were: Mr. Paul R. Picha (B.A. anthropology), Ms. Anne C. Kerr (B.A. anthropology), Mr. Stephen M. Perkins (B.A. anthropology), and Ms. Kimberly G. Neely (B.A. anthropology and biology). Kerr, Perkins, and Neely were graduate students in master's degree programs at the time of the fieldwork. All laboratory and report preparation work was conducted under Toom's supervision. Most routine laboratory operations were performed by Ms. Jane G. Monson-Toom (B.A. anthropology). Monson-Toom also drafted the final line drawings appearing in this report.

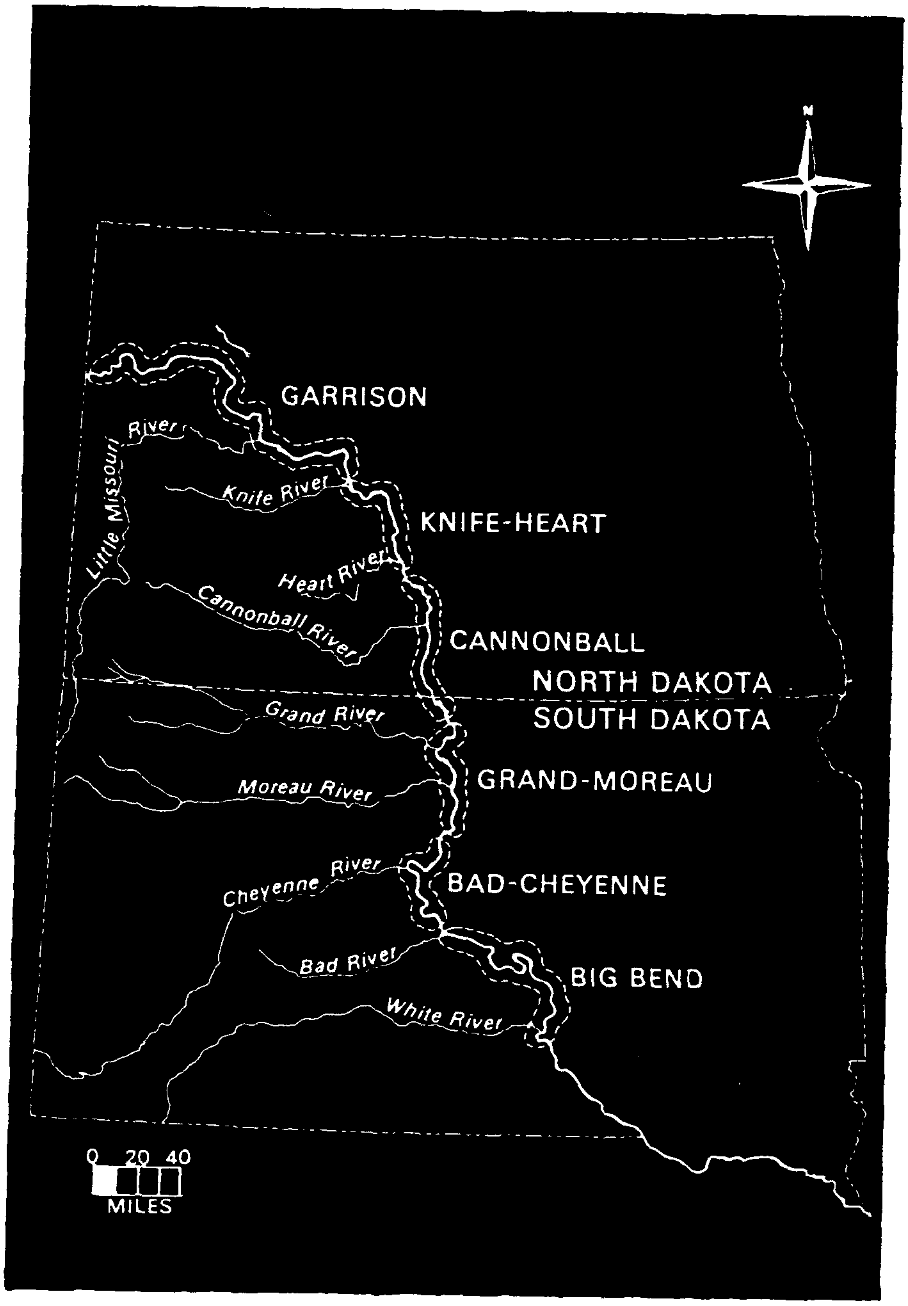


Figure 3. Map of the Regions of the Middle Missouri Subarea (from Lehmer 1971:29).

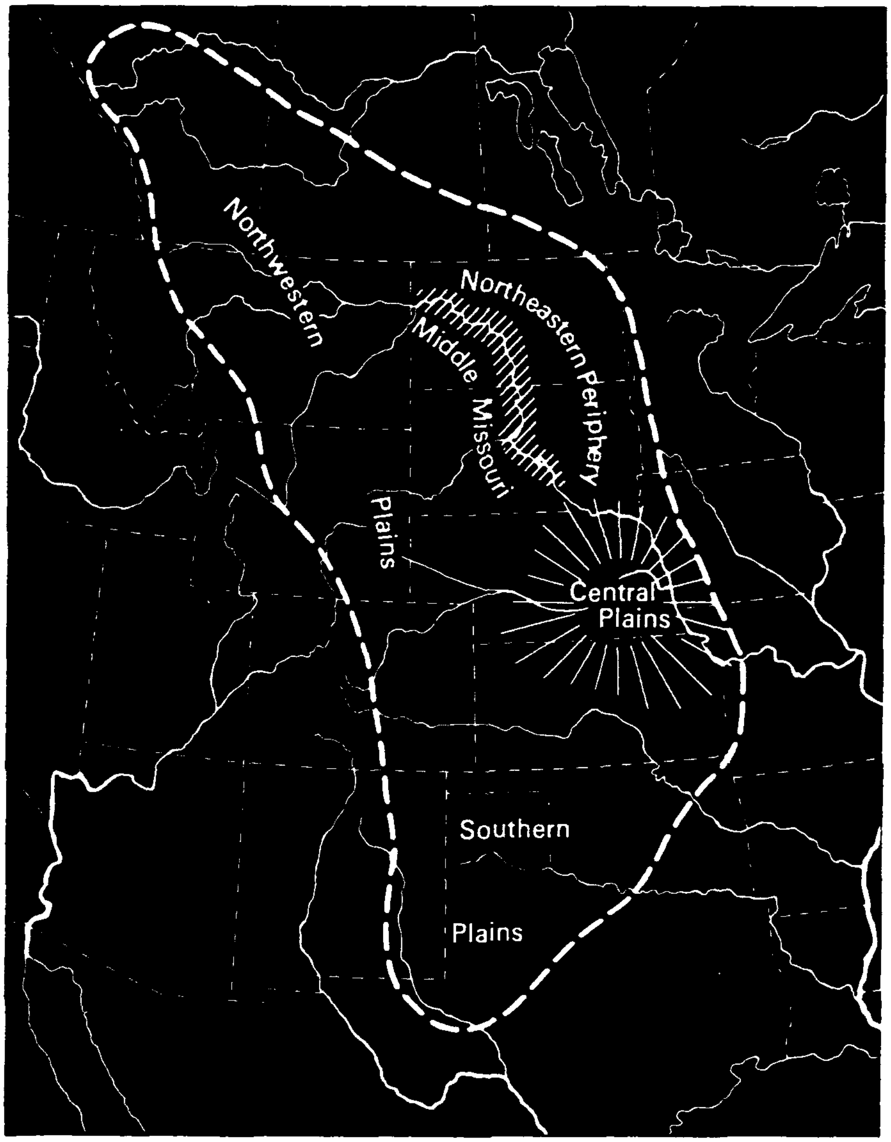


Figure 4. Map of the Subareas of the North American Plains (from Lehmer 1971:29).

Other persons who contributed to the project in a substantial way include Ms. Margaret A. Van Ness of Cimarron Environmental Consortium, Golden, Colorado, and Mr. Charles W. Wheeler of WCRM. Van Ness was responsible for processing flotation samples and identifying recovered macrobotanical remains (seeds); she was assisted by Kathleen Cushman who provided the wood sample identifications. Van Ness' report is presented as Appendix A. Wheeler organized the data and wrote the report on the identifiable and modified vertebrate faunal remains (bone); he was assisted by Elaine Anderson, who provided most faunal identifications, and Don Lindsey, who did minor identification work. Wheeler's report is presented as Appendix B. Toom helped to complete Appendix B after Wheeler became seriously ill and was unable to finish the report. Paul R. Picha of UND provided the identification and description of the modified shell specimen (large gastropod) in the Antelope Dreamer (39LM146) collection. Radiocarbon dates were produced under the supervision of Dr. R. E. Taylor of the Radiocarbon Laboratory, Department of Anthropology, University of California, Riverside.

Agency Coordination

During the course of the project, coordination was maintained with USACE personnel at the Omaha District Office, the Lake Sharpe and Lake Oahe Project Offices, and the Real Estate Office in Pierre. Contacts were also maintained with personnel at the South Dakota Archeological Research Center, Rapid City, and the South Dakota Historical Preservation Center, Vermillion. The Lower Brule and Crow Creek Sioux Tribes and the Three Affiliated Tribes (Mandans, Hidatsas, and Arikaras) were informed of the project in advance of field work by both the Corps and WCRM personnel. Brief meetings were also held with Lower Brule and Crow Creek tribal representatives during fieldwork.

Disposition of Artifacts and Records

Information and materials accumulated during background research and fieldwork were returned to WCRM laboratories for processing and analysis. All collected artifacts were washed, restored or stabilized, if necessary, and catalogued; specimen inventories were compiled. Field notes, excavation forms, and other project documents were organized, finalized, and collated. Project records and collections were then transferred to UND, as discussed above. All artifactual and ecofactual materials collected during the course of the project are permanently housed at the South Dakota Archeological Research Center, Rapid City. Original project records are on file with the U.S. Army Corps of Engineers, Omaha District, Omaha, Nebraska. Duplicate sets of records are maintained along with the artifact collections in South Dakota, and at the Department of Anthropology, University of North Dakota, Grand Forks.

Report Organization

Organization of this report is based on the perceived desirability of presenting the results of the testing at each site within a single section. This format obviates the need to consult a number of different analytical sections for information on a particular site, which would have been necessary if the report had been organized around separate classes of data (i.e., stratigraphy, features, ceramics, lithics, bone, etc.). The main body of the report begins with a Management Summary. This summary is intended to provide a brief overview of the salient findings and recommendations of the project for USACE cultural resource management personnel. The Management Summary is followed by Introduction, Research Design, and Background Information sections. Sections containing reports on the results of the testing at each site are presented next. A separate section on Radiocarbon Dates is provided after the site reports because of the specialized nature of these data. The main body of the report concludes with a Synthesis and Interpretation section and a section on National Register Evaluations and Management Recommendations.

All of the foregoing material was authored by Dennis L. Toom, the principal investigator. Analyses of macrobotanical remains and identifiable and modified vertebrate faunal remains were prepared by different authors, as discussed previously. These reports are contained in Appendices A and B, respectively. The results of these separate analyses are summarized in the individual site reports where appropriate. Detailed soil descriptions, computer coding formats, provenience data, site artifact inventories, and other selected materials are also presented in appendix form. Other project documentation such as excavation forms, maps and drawings, photographs and photo records, National Register nomination forms, the paper for publication, and the public slide presentation were submitted under separate cover to the U.S. Army Corps of Engineers, Omaha District, following the review and finalization of this report.

III. RESEARCH DESIGN

Research Goals and Strategies

The research goals of this study and the strategies employed in their achievement come from a number of different sources. These sources include the USACE SOW (Appendix O), the South Dakota RP3 (Buechler 1984), previous research relevant to the project area (e.g., Falk 1984; Lehmer 1971; Steinacher 1981; Steinacher and Toom 1985; Toom and Picha 1984), and the specific research interests of key project personnel. These research goals are divisible into two major categories: (1) management concerns and (2) scientific concerns. This division is not meant to imply that management and scientific goals are mutually exclusive, quite the contrary, they compliment each other at a number of key junctures. However, such a division is useful for purposes of discussion.

Management Goals and Strategies

Management research goals are those designed to meet the needs of regulatory agencies, both state and federal, that have been charged with the documentation and preservation of significant cultural resources. In this case, these goals are largely concerned with USACE regulations regarding the identification of significant prehistoric archeological sites and the development of measures appropriate to their proper management in order to meet present and future research and interpretive needs that are in the public interest. The National Register of Historic Places nomination process is central to the achievement of management research goals.

Assessment of National Register Eligibility. Without question, the primary management goal of this study is the assessment of National Register eligibility for the eight sites in question. Toward this end, information was generated on the age, cultural-historical affiliation, function, boundaries (horizontal and vertical), integrity, and research potential for each site in so far as is possible given the inherent limitations of the sites themselves and the imposed testing restrictions. These data constitute the basis for evaluating the significance of the sites and making an assessment of their eligibility for inclusion on the National Register of Historic Places (cf. NPS 1986). Standard archeological documentation and analysis techniques were employed in the acquisition of this information, as discussed in subsequent sections. As required in the SOW, appropriate National Register forms and related documentation on all sites that were judged to contain significant archeological components were prepared and submitted to the USACE to facilitate the nomination process.

Development of Management Recommendations. An integral part of the National Register process involves the development of recommendations or management plans that are concerned with the mitigation of present and perceived future impacts to significant cultural resources. Measures directed at the preservation of significant archeological sites are always preferred, but it is recognized that preservation is not always practical or cost

effective. In such instances, it may be necessary to recommend salvage excavation as the only viable management option. Management plans are developed in the present report for each site submitted for nomination to the National Register.

Scientific Goals and Strategies

Scientific research goals revolve around the generation of information on the historical and behavioral aspects of the sites under study, their depositional and environmental contexts, and their relationships to relevant archeological complexes. General topics of primary interest in contemporary archeological research include chronology and culture history, cultural reconstruction, environmental reconstruction, and cultural ecology.

Chronology and Culture History. Reliable culture histories, including both temporal and taxonomic considerations, are essential to the proper ordering of archeological data. Prehistoric cultural sequences form the basis from which higher-level behavioral inferences are made regarding past human behavior and the processes influencing or directing these behaviors. Chronological and cultural assessments of the sites under study are made using three complimentary techniques: (1) radiocarbon (C-14) dates, (2) analysis of temporal-cultural diagnostic artifacts, and (3) stratigraphic correlations (chronostratigraphy). These data are used where possible to place components at the investigated sites within the current cultural-historical framework of the study region (i.e., Lehmer 1971). The temporal parameters and taxonomic relations of the cultural-historical contexts identified for each site component are then evaluated in light of these and other new data.

Cultural Reconstruction. Determining the past lifeways of prehistoric peoples is also a central topic in modern archeology. Of the various aspects of prehistoric lifeways that could be studied, this research focuses on providing data relevant to the reconstruction of settlement-subsistence patterns, technology, territoriality, and cultural interaction.

Subsistence, as defined herein, refers to the acquisition of those resources necessary to the maintenance of life, including both foodstuffs and technological raw materials. Data on subsistence are generated through detailed identifications of the remains of floral and faunal food resources and the raw materials used in the manufacture of tools and facilities. Floral and faunal resource identifications are made to the species level whenever possible. Lithic resources are identified according to established lithic types (e.g., Ahler 1977a).

Identification of pollen in samples from features can also be used to provide subsistence data on plant resources. The generation of subsistence data was, presumably, the goal behind the specification in the USACE SOW that pollen samples would be collected from all excavated features. Pollen samples were collected from most excavated features during the course of fieldwork, but these samples are probably highly biased because they were taken from fire hearths associated with the remains of earthlodges. Samples were not taken from the earthlodge remains themselves because of potential biases caused by problems in precise floor definition, the mixing of floor and roofing

materials upon the collapse of the structures, and the obvious burning of some houses. In consultations with pollen experts at the Institute of Arctic and Alpine Research, University of Colorado, Boulder, it was concluded that the heat produced by fires in the hearths (and possibly in the burned houses as well) would have effectively destroyed any contemporary pollen that might have been present in the samples (Vera Markgraf, personal communication 1987). In view of this, and with the approval of the USACE technical officer (Richard Berg), analysis of these pollen samples was abandoned in favor of placing more emphasis on the identification of macrobotanical remains.

A settlement pattern describes the way a people occupy and distribute themselves across the landscape in order to acquire or produce subsistence goods. The position of site components within a general settlement system is inferred here through considerations of primary function based on artifactual and ecofactual analyses. The components in question are then assigned to recognized settlement types such as those proposed by Binford (1980), which seem to have considerable relevance to the late prehistoric cultures of the study region. For example, the mixed economy of Plains Village peoples, which is based on a combination of hunting, gathering, and horticulture, would require a logistical organizational strategy for the procurement of plant and animal resources. Under a logistical strategy, specific resources are obtained by specially organized task groups.

> Logistical strategies are labor accommodations to incongruent distributions of critical resources or conditions which otherwise restrict mobility. Put another way, they are accommodations to the situation where consumers are near one critical resource but far from another equally critical resource. Specially constituted labor units -- task groups -- therefore leave a residential location, generally moving some distance away to specifically selected locations judged most likely to result in the procurement of specific resources (Binford 1980:10).

It is the horticultural (garden agriculture) practices of Plains Villagers at their permanent villages in the Missouri Valley that would have been the primary factor restricting mobility at various times of the year among these semisedentary peoples. Special task groups dispatched from the villages would have included hunting and gathering parties whose main task was the collection of wild plant and animal resources between periods of maximum horticultural activity (cf. Hurt 1969). The acquisition of other raw materials (e.g., lithics) was probably a secondary concern of these task groups.

The logistical organization of Plains Villagers indicates a collector type of settlement-subsistence system (Binford 1980:10-12). Site types identified for collectors include: (1) residential bases, (2) locations, (3) field camps, (4) stations, and (5) caches. The <u>residential base</u> is "the hub of subsistence activities, the locus out of which foraging [collecting] parties originate and where most processing, manufacturing, and maintenance activities take place" (Binford 1980:9). The permanent villages of Plains Villagers were their residential bases. <u>Locations</u>, which are also often referred to as activity areas, are special-purpose sites devoted exclusively to resource production or acquisition. In the case of Plains Villagers, these would have included garden plots, animal kill and kill processing (butchering) sites, gathering areas, quarries, and similar specialized activity loci. A <u>field camp</u> is a temporary base of operations for a task group while it is away

from the main residential base; stations are special-purpose sites used by task groups to gather information; and caches are sites where bulk subsistence goods are temporarily stored in the field while awaiting transportation to the residential base. Cemeteries or burial sites are another special-purpose site type that can be added to this model for late prehistoric cultures in the study region.

For the purposes of this report, a logistical strategy and a collector settlement system are assumed for both the Plains Village and Plains Woodland traditions. Because of the selective nature of the sites under study and the inherent limitations of testing data, the development of comprehensive settlement-subsistence models for these traditions is not possible within the scope of this research. However, it is possible to relate most of the site components to one or more of the settlement types described above.

Reconstruction of prehistoric technologies proceeds from detailed analyses of recovered artifacts. Major classes of technological elements that are given detailed analytical treatment include lithics, ceramics, bone, and features such as hearths. The reconstruction of territoriality, a term which is synonymous with the utilization of local and regional space in the sense that it is used here, ordinarily presupposes the existence of comprehensive settlement-subsistence models. However, some information on the territorial range of the various archeological cultures under study is provided by considerations of site function and resource exploitation. The identification of exotic (nonlocal) and local resource materials is used toward this end.

An ability to completely characterize cultural interaction is also limited by the restrictive nature of this study. Attempts are made to recognize prehistoric trade and the extent of prehistoric trade networks by identifying exotic materials and their likely sources of origin. A focus on lithic raw material utilization is assumed here because these materials have been studied in some detail with regard to local versus nonlocal availability, and differences in lithic resource utilization patterns among various Middle Missouri archeological taxa have been documented (e.g., Ahler 1977a, 1989a; Johnson 1984a, 1989; Toom 1984a). Variability in other classes of artifacts (e.g., ceramics) is also investigated to the extent possible to provide additional insights into the nature of perceived cultural interactions.

Environmental Reconstruction. Reconstruction of paleoenvironmental conditions has gained equal footing with cultural reconstruction in modern archeological research. Information on paleoenvironmental conditions relevant to the cultural components identified at the eight tested sites are provided by (1) identifications of selected ecofacts (macrobotanical and faunal remains) and (2) geomorphological (landform) and pedological (soils) descriptions and analyses. Comparisons with existing paleoclimatic models (e.g., Wendland 1978) are also made where appropriate.

Ecofactual analyses are limited to identifications of macrospecimens such as carbonized plant remains and vertebrate faunal materials. The collection of pollen samples from features alone, as specified or at least implied in the SOW, is far too limited to yield meaningful results. Meaningful, comprehensive paleofloral reconstructions based on pollen identifications require complete, incremental sampling of profiles in undisturbed contexts, including surface sampling of the modern pollen rain (Vera Markgraf, personal

communication 1987). Such sampling falls beyond the USACE SOW and was not performed. Small mammal remains (rodents and insectivores) have been used successfully in reconstructing paleofaunas for purposes of environmental reconstruction (e.g., Semken 1983a, 1983b; Semken and Falk 1987). However, in this case, only a very few small mammal bones were recovered, and these limited samples are inadequate for making reliable paleoenvironmental inferences. Consequently, paleofaunal reconstructions focus on the identification of bones from larger-sized mammals.

Geomorphological and pedological characterization of depositional contexts for identified components are used where feasible to provide additional information on paleoenvironmental conditions, particularly paleoclimate. Such considerations fall under the general referent of geoarcheology, which includes techniques that have gained wide use in the characterization of paleoenvironmental conditions for archeological contexts (e.g., Butzer 1971, 1982; Davidson 1985; Gladfelter 1981; Hassan 1985). For example, based on models of sediment yield and climate (Langbein and Schumm 1958; Schumm 1965, 1977), which reflect variability in precipitation, temperature, vegetation, and hillslope stability, stratigraphic correlation of archeological contexts with episodes of deposition, erosion, and/or stability observed in the geological record can be used to infer paleoclimatic conditions (e.g., Clayton et al. 1976; Coogan 1987; Knox 1983). Such an approach is followed here in arriving at limited paleoclimatic inferences based on geomorphological and pedological data.

Cultural Ecology. The theoretical and methodological underpinnings of cultural ecology assume that the interaction of culture and environment is a primary driving force if not a determining factor in cultural evolution (cf. Steward 1955, 1977). Cultural ecological studies are microevolutionary. They attempt to elucidate specific, synchronic patterns of human adaptation relative to key environmental variables, in addition to determining specific, diachronic human adaptive responses to changing environmental conditions. In other words, cultural ecology seeks to explain variability in a particular culture in relation to the variability found in the environment of that culture, at a particular point in time and over extended periods of time. The effective environment, in the sense that this term used here, includes both physical (natural) and cultural factors that influenced a particular culture. Thus, cultural interaction is also a key environmental component of the cultural ecological approach.

Clearly, comprehensive cultural-ecological (microevolutionary) models of prehistoric cultures require reliable data on chronology and culture history, cultural configurations and adaptive strategies, and paleoenvironmental conditions. Toward this end, the research goals and strategies discussed previously are all aimed at providing data for the construction of comprehensive cultural-ecological models for the Lake Sharpe area and beyond. A great deal of progress has been made in establishing a cultural-historical framework for the Lake Sharpe area, although ample opportunity exists for improvement. Cultural and environmental reconstructions are still in their infancy, however, and much additional study is required before these aspects of the prehistory of the Lake Sharpe area are placed on sound footing. While the actual formulation of cultural-ecological models is well beyond the scope of this study, it is anticipated that data derived from it will eventually contribute to this ultimate goal.

Other, Specific Research Topics. In addition to the general research goals just presented, specific research topics pertaining to the Big Bend and Bad/Cheyenne study units, as discussed in the South Dakota RP3 (Buechler 1984), can be identified. Many of these topics have been covered in general terms above, and only those of a very specific nature that are relevant to the present study are considered here.

The need to identify Plains Woodland habitation sites that correlate with burial mound sites has been a serious deterrent to continued Plains Woodland period research in the Big Bend unit (cf. Toom 1984b). This problem is addressed to some extent by data from the Windy Mounds (39LM149) and Sitting Buzzard (39ST122) sites. Examination of the external and internal relationships of Initial Middle Missouri sites is another issue that can be approached to a limited degree. In this regard, the present study is able to offer additional data on the Grand Detour phase of the Initial Middle Missouri variant (Caldwell and Jensen 1969) from the perspective of the recently discovered Antelope Dreamer site (39LM146).

Questions have been raised about the emphasis placed on wild versus domesticated plant foods between some Coalescent and Middle Missouri tradition populations. Specifically, it has been proposed that Initial Coalescent variant populations relied more on wild plant foods than did their Middle Missouri counterparts (Initial and Extended variants). The present study is able to provide considerable data on this topic derived from the Initial Middle Missouri village at the Antelope Dreamer site (39LM146). The related question of whether Initial Coalescent variant and Middle Missouri tradition subsistence strategies were fundamentally different has also been raised. Data from the Antelope Dreamer site also has a significant bearing on this issue.

More detailed definition of the Extended Coalescent variant is also a recognized need, especially in terms of chronology and possible ethnic affiliation. For example, Hoffman (1963, 1967) has speculated that the Extended Coalescent variant may represent both ancestral Arikara and Pawnee populations. It may be possible to address the ethnicity question vis-a-vis a comparative analysis of Extended Coalescent and Lower Loup ceramics, as suggested by Buechler (1984:51). However, virtually no comparative data are presently available for these two late Plains Village taxonomic units, and such an extensive study is well beyond the scope of this project in terms of the Extended Coalescent components identified at the West Bend (39HU83) and Buzzing Yucca (39LM166) sites. Test excavations at West Bend and Buzzing Yucca did not yield any materials suitable for accurate radiocarbon dates. Therefore, it is also not possible to provide any additional absolute chronological data on the Extended Coalescent variant. Further examination of the variability within the Post-Contact Coalescent variant (i.e., phase definition), and whether this variability can be used to identify recognized Arikara subgroups, is another relevant research topic. The Post-Contact components at the Ghost Lodge (39ST120) and Sitting Buzzard (39ST122) sites most certainly represent a small portion of this variability, but their ability to contribute to the problem of the recognition of Arikara subgroups in the archeological record is highly problematic and at best unclear.

Literature and Records Search

A careful search of all reports, files, and other documents pertaining to the archeology of the Lake Sharpe area, especially those pertinent to the eight sites scheduled for testing, was performed in May 1987. This work was conducted by the principal investigator (Dennis L. Toom) using copies of published reports, manuscripts, files, maps, and aerial photos in his possession. Travel to the various repositories housing original materials was not necessary in view of the extensive background research already conducted by Toom and others in conjunction with previous projects (Steinacher 1981; Steinacher and Toom 1984a, 1985; Toom and Picha 1984; Toom et al. 1979). Consultations were made with personnel at the Office of the State Archaeologist, South Dakota Archaeological Research Center, Rapid City; the State Historic Preservation Office, South Dakota Historical Preservation Center, Vermillion; the Midwest Archeological Center, U.S. National Park Service, Lincoln, Nebraska; and the U.S. Army Corps of Engineers, Omaha District, to insure that this information was complete.

The literature and records search included all documentation produced on the project area from 1947-1968 by the River Basin Surveys program of the Smithsonian Institution (SIRBS). These records were formerly maintained at the Midwest Archeological Center; they have since been transferred to the state of South Dakota and are now housed at the South Dakota Archaeological Research Center in Rapid City. Reports and file material at the Division of Archeological Research, Department of Anthropology, University of Nebraska, Lincoln, and the Department of Anthropology, University of North Dakota, Grand Forks, were also examined for information on major archeological investigations in the project area covering the period from 1978-1984. Other literature and records searches were also made in conjunction with past projects at the Midwest Archeological Center; the South Dakota Archaeological Research Center; the South Dakota Historical Preservation Center; the Archaeology Laboratory and the W. H. Over Museum, University of South Dakota, Vermillion; the Department of Sociology and Anthropology, South Dakota State University, Brookings; the Archaeology Laboratory, Augustana College, Sioux Falls; the State Historical Society of South Dakota, Pierre; and local historical societies and county courthouses. Relevant National Register documents were also reviewed as a part of this project (e.g., Steinacher and Toom 1985).

The present literature and records search focused on documentation produced by UND personnel in conjunction with an archeological survey of selected federal lands on the west bank of the Lake Sharpe project area in 1983 (Toom and Picha 1984; Picha and Toom 1984). Seven of the eight sites under study here were first identified and recorded as part of this survey project, which was conducted by UND on behalf of the U.S. Army Corps of Engineers, Omaha District. The West Bend site (39HU83/231) is the only site for which any documentation existed prior to 1983 (e.g., Falk 1984; Jensen n.d.; SIRBS records).

Field Procedures

Field procedures employed in this testing project were fairly standard for the eight sites in question, with a few exceptions. Exceptions include decisions that were made regarding the use of fine recovery techniques (one-sixteenth inch water screen samples) for selected excavation units. Details of the test excavations performed at each site and any other exceptions to standard procedures of a site specific nature are discussed in each site report under Fieldwork.

All test units were of a uniform 1 X 1 m size. Multiple test units were often placed together to comprise larger excavation units (i.e., 1 X 2 m, 2 X 2 m, or 1 X 4 m excavations) into house (earthlodge) features. Test units were excavated entirely by hand using shovels, trowels, brushes, and small hand tools such as dental picks when conditions warranted. Smaller-sized features such as hearths were excavated as separate units following their human-made contours. The human-made contours of house floors were also followed within test units during excavation. Vertical excavation generally proceeded in 10 cm arbitrary levels. A shift to natural levels that usually vary from the 10 cm standard was made when house floors and other features were encountered. The term excavation unit is used here to refer to spatially discrete episodes of excavation, such as levels within test units, including both general (arbitrary) levels and feature levels.

All sediment (soil) matrix was dry screened through 4-per-inch mesh screen (one-quarter inch hardware cloth, ca. 6 mm square opening), except for water screen samples. Water screen samples were washed through 16-per-inch mesh screen (one-sixteenth inch window screen, ca. 1.5 mm square opening) using a pressurized flow of water. When a decision was made to provide finer recovery than that afforded by one-quarter inch dry screening, a 33.3 X 33.3 cm block sample was removed from one corner of a test unit level for processing by one-sixteenth inch water screening. These water screen samples constitute a one-ninth (11%) sample of a test unit level. The remaining portion of the test unit level, representing an eight-ninths (89%) sample, was then dry screened. Standard sized water screen samples were generally taken from to excavation units into house features, particularly at the Antelope Dreamer site. Various portions of other features (hearths) were also water screened.

Placement of test units was done judgmentally on the basis of two primary considerations. Appropriate blocks of test units were placed over selected house depressions at sites presumed or known to contain architectural remains in order to sample the content of these features. The remaining allotment of test units was then dispersed throughout the site area beyond apparent feature locations in order to sample extramural artifactual content, and to provide data on vertical and horizontal site boundaries. Random or systematic strategies of test unit placement had to be rejected in view of low test area to site area ratios (Table 2). Hand coring using a small diameter Oakfield tube kit (soil probe) was also done to aid in test unit placement and to provide stratigraphic information during excavation.

Table 2. Data on Specified Test Areas Relative to Estimated Maximum Site Areas, Lake Sharpe Testing Project, WCRM, 1987.

Site Number	Description	Test Area (m^2)	Approximate Site Area (m^2)	Test Area/ Site Area Ratio
39HU83	Artifact Scatter	8	40,500	0.0002
39LM146	Earthlodge Village	8	37,500	0.0002
39LM149	Mounds (?) Rock Forms Lithic Scatter	4	15,000	0.0003
39LM156	Buried Horizons Dugout Depression	3	5,000	0.0006
39LM166	Earthlodge Village Dugout Depressions	8	160,000	0.0001
39ST120	Earthlodge Village Buried Horizon	8	30,000	0.0003
39ST121	Buried Horizons	2	2,000	0.001
39ST122	Earthlodge? Buried Horizons	6	15,000	0.0004

Test unit excavations were documented using standard excavation unit forms and plan maps. Larger scale plan maps were made of test unit blocks. Profiles of at least one wall of each test unit or test unit block were drawn and photographed. Test unit locations were tied into existing site maps using a transit and stadia rod. Existing site datums were used if possible. Some difficulty was experienced in locating existing datums at certain sites. In these cases, a new datum was established and tied into the existing base map through correlations with conspicuous features. The new site datums consist of pieces of steel rebar set flush to the ground surface. With a few exceptions, all test units and test unit blocks were oriented on magnetic north.

Field Cataloging, Test Unit Numbering, and Feature Numbering

A systematic approach to the assignment of catalog numbers to excavation units was adopted in the field. Test units were numbered sequentially from 1 to n, depending on the number of test units excavated at each site. Each level from a test unit (i.e., each excavation unit) was then assigned a number in sequence beginning in the hundreds relative to the test unit number. For example, level 1 of test unit 1 was assigned catalog number 101, level 2 of test unit 1 was assigned catalog number 102, level 8 of test unit 8 was assigned catalog number 808, level 9 of test unit 8 was assigned catalog number 809, and so on. Levels for each test unit were numbered in this manner, with the exception of levels that were water screen sampled.

Excavation units from which water screen samples were removed are numbered according to a different sequence. In such cases, the catalog number does not refer to a level, but rather, indicates the type of screened sample; even numbers in the sequence identify dry screen samples (one-quarter inch mesh) and odd numbers in the sequence identify water screen samples (one-sixteenth inch mesh). For example, catalog number 500 refers to the dry screen sample of level 1 in test unit 5, while catalog number 501 refers to the water screen sample of level 1 in test unit 5; catalog number 512 identifies the dry screen sample of level 7 in test unit 5 and catalog number 513 identifies the water screen sample of level 7 in test unit 5; and so on.

Exceptions to these standard field cataloging procedures also exist, such as when a feature was encountered in a test unit. Features or portions of features within a test unit were also assigned catalog numbers within the test unit numbering sequence, but the need to apply special techniques in feature excavation often necessitated breaking with the logic of the basic catalog numbering system. For example, catalog number 824 could refer to a portion of Feature 100 isolated in test unit 8. In such cases, the catalog number does not necessarily indicate a particular level or screening technique, but rather, is a unique identification for that portion of a feature removed from a particular test unit. Reference to artifact inventories and excavation unit forms is necessary to sort out exceptions to the basic numbering system. The important point to recall is that all excavation units (both general levels and features) have been assigned a catalog number that ties them to a sequence relative to a particular test unit at each site.

Catalog numbers assigned in the field are used to key artifacts recovered from a particular excavation unit to that unit. In other words, field catalog numbers identify a provenience unit within a site (i.e., a particular excavation unit), not individual artifacts or classes of related artifacts, as is the case in some other archeological cataloging systems. All artifacts and other materials recovered from an excavation unit are assigned the same catalog number, which, again, identifies their provenience. Field catalog numbers are used in the laboratory to compile artifact inventories, which are also provenience based, as discussed below.

A systematic approach to the numbering of features was also adopted in the field. Single to double digit feature numbers were reserved for large-sized features, such as earthlodges and other structural remains, as well as feature numbers assigned during previous work (Falk 1984; Toom and Picha 1984). Triple digit feature numbers were assigned to smaller-sized features,

such as hearths and pits, in the order that these features were identified during excavation. Therefore, feature numbers indicate the general nature of the feature they identify, as well as the order it was recorded in; they do not link features to test units. Catalog numbers assigned to various features and portions of features are used to key them to particular test units. Assigned field catalog, test unit, and feature numbers for each site are listed in Table 3.

Table 3. Assigned Feature Numbers, Test Unit Numbers, and Field Catalog Numbers, Lake Sharpe Testing Project, WCRM, 1987.

Site Number	Feature Numbers	Test Unit Number	Field Catalog Numbers
39HU83	100-102	1	101-103
		2	201-203
		3	301-304
		4	401-403
		5	501-503
		6	601-603
		7	701-703
		8	801-804
39LM146	1-15	1	101-110
	100-118	2	201-206
		3	300-322
		4	401-406
		5	500-526
		6	600-627
		7	700-726
		8	800-828
		9	900-922
39LM149	1-5	1	101-105
		2	201-205
		3	301-305
39LM156	1	1	101-113
		2	201-213
		3	301-309
39LM166	1-9	1	101-107
	100-102	2	201-207
		3	301-304
		4	401-404
		5	501-502
		6	601-605
		7	701-703
		8	801-803

Table 3. Assigned Feature Numbers, Test Unit Numbers, and Field Catalog Numbers, Lake Sharpe Testing Project, WCRM, 1987 (Concluded).

Site Number	Feature Numbers	Test Unit Number	Field Catalog Numbers
39ST120	1-7	1	101-107
	100-101	2	201-208
		3	301-310
		4	401-408
		5	501-507
		6	601-606
		7	701-708
		8	801-811
39ST121	1	1	101-107
		2	201-204
39ST122	1	1	101-103
		2	201-206
		3	301-310
		4	401-408
		5	501-506
		6	601-608

Provenience Coding

A computerized provenience key was developed to enable better control over the excavation unit data generated for each site. The provenience key is constructed around site and catalog numbers, and includes information on location, recovery, and context for all excavation units. The computer code is presented in Appendix D, along with the provenience data for each excavation unit (catalog number) at each tested site. Provenience data has also been transferred to the artifact inventories produced for each site in order to provide complete information on location, recovery, and context for all collected materials. Components of the provenience code were also used to generate descriptive and analytical artifactual data for the sites under study.

Laboratory and Analysis Procedures

This section outlines the basic laboratory processing and analysis procedures applied to the collections derived from the 1987 Lake Sharpe testing work. For purposes of comparability, the procedures used here are much the same as those used to process and analyze other recently excavated archeological materials from the Lake Sharpe area (i.e., Falk 1984; Toom 1989b), as well as from elsewhere in the study region. The general model for these procedures comes from the Jake White Bull (39CO6) site report (Ahler 1977b). In the years since the Jake White Bull report was produced, some modifications have been made to the basic laboratory and analytic schemes. Their most recent, revised, and comprehensive application is described in the Big Hidatsa (32ME12) site report (Ahler and Swenson 1985). This report details laboratory and analysis procedures currently applied by University of North Dakota researchers to all archeological collections from the Knife River Indian Villages National Historic Site (KNRI) and other Plains Village sites in North Dakota. These procedures, which are state-of-the-art for Plains Village collections, were used as models for this study wherever possible.

Flotation and Light Fraction Separation

The first laboratory processing step was to separate the light and heavy material fractions from all water screened samples by water flotation. Flotation was used primarily as a convenient device for removing recent organic debris (e.g., rootlets) from the samples to facilitate sorting. Light fraction materials in the dry screen samples were also separated by water flotation or picked from the samples by hand prior to size-grading. Burned seeds and other identifiable botanical remains were separated from the light fraction aggregate and set aside for species identification. Other materials such as wood and wood charcoal were not sorted from the light fraction aggregate or subjected to any specialized analyses; they are retained in the bulk light fraction samples in the collections. Specially selected samples of wood and wood charcoal (i.e., those with significant feature associations) were submitted for species identification.

Size-Grading

The next step in processing was to separate the heavy fraction debris from each provenience unit (designated by individual field catalog numbers) into size grades. Size-grading segregates materials into samples of uniform size to facilitate subsequent sorting into basic material and artifact classes. It also provides information on the relative degree of fragmentation of the various materials represented, as well as providing consistent, arbitrary cut-off points at which to cease sorting materials too small to be of use in analysis (Ahler and Swenson 1985:69).

Materials recovered from the 1987 Lake Sharpe testing work were passed through screen mesh purchased at a hardware store with the following size designations and actual openings:

G1 -- Grade 1 = one inch (ca. 24 mm opening)
G2 -- Grade 2 = one-half inch (ca. 12 mm opening)
G3 -- Grade 3 = one-quarter inch (ca. 6 mm opening)
G4 -- Grade 4 = one-eighth inch (ca. 3 mm opening)
G5 -- Grade 5 = one-sixteenth inch (ca. 1.5 mm opening)
<G5 -- Material passing through a ca. 1.5 mm opening.

The screen openings stated in millimeters above represent actual values based measurements made on the screens. The values stated in inches represent manufacturing specifications for spacing the wire in the screen mesh. Differences between manufacturing specification sizes and actual opening sizes largely reflect the thickness of the wire used to construct the screen mesh (e.g., one inch = ca. 25.4 mm wire spacing with an opening of ca. 24 mm). Minor variations in wire spacing were also noted while measurements were being made on the screen openings.

A hand-operated aggregate shaker with nested screens was used in size-grading; larger-sized materials were hand manipulated through the G1 and G2 screens; smaller-sized materials were shaken for about 30 seconds through the G3, G4, and G5 screens. Because the G5 screen is the same size mesh as that used for water screening (one-sixteenth inch), <G5 residue represents a nonsystematic, fortuitously collected sample of material. Therefore, the <G5 residue was not used as an analytic sample, and it has not been retained as part of the site collection. Only size grades 1-3 are relevant to the processing and analysis of dry screened samples because these materials were passed through one-quarter inch mesh hardware cloth in the field.

The size-grading procedures described above vary in some details from those described in the Big Hidatsa report (Ahler and Swenson 1985:69). The Big Hidatsa collection (and all other KNRI collections) was size-graded using U.S. Standard Sieve Cloth screens that have somewhat different openings than the common hardware store screens employed here. Additionally, size-grading of the Big Hidatsa collection was accomplished using nested screens in a mechanical shaker. U.S. Standard Sieve Cloth screens and mechanical shaking are advantageous in that they produce more consistent and more precise size-grade data; disadvantages lie in the relatively large expense of these items. Budgetary constraints necessitated the use of the less expensive and admittedly less precise size-grading apparatus described above in this research. However, these differences should not materially affect the results of this study and their comparability to other, similar studies.

Sorting and Quantification

Initial sorting involved the separation of the size-graded, heavy fraction material aggregate from each provenience unit into basic material classes. A second sorting step was used to further divide most material classes into general artifact classes. All excavated dry screen samples were sorted according to specifications detailed in Table 4; water screen samples were sorted following specifications detailed in Table 5. The <G5 fractions were searched for glass beads and bead fragments, which can occur in these

Table 4. Sorting Specifications for One-Quarter Inch Dry Screen Samples, Heavy Fraction Materials, Lake Sharpe Testing Project, WCRM, 1987.

Material Classes in Initial Sort	Material or Artifact Classes in Second Sort	Size Grade Sorted From				
		G1	G2	G3	G4	G5
Modified Stone	Stone Tools	X	X	X	na*	na
	Chipped Stone Flaking Debris	X	X	X	na	na
Native Ceramics	Rim Sherds	X	X	X	na	na
	Body Sherds	X	X	X	na	na
	Other	X	X	X	na	na
Vertebrate Fauna	Modified Bone	X	X	X	na	na
	Unmod. Identifiable Bone	X	X	X	na	na
	Unmod. Unidentifiable Bone	X	X	X	na	na
Shell	Modified Shell	X	X	X	na	na
	Unmod. Identifiable Shell	X	X	X	na	na
	Unmod. Unidentifiable Shell	X	X	X	na	na
Fire-Cracked Rock	Check for Tools	X	X	X	na	na
Natural Clinker	Check for Tools	X	X	X	na	na
Burned Earth/ Fired Clay		X	X	X	na	na
Ash		X	X	X	na	na
Ochre/Pigment		X	X	X	na	na
Miscellaneous Native Material	Glass Trade Beads	X	X	X	na	na
	Other Trade Glass	X	X	X	na	na
	Trade Metal	X	X	X	na	na
	Other	X	X	X	na	na
Miscellaneous Euroamerican (Recent) Material	Glass	X	X	X	na	na
	Ceramics	X	X	X	na	na
	Metal	X	X	X	na	na
	Other	X	X	X	na	na
Natural Rock	Check and Discard	X	X	X	na	na

*Not applicable.

Table 5. Sorting Specifications for One-Sixteenth Inch Water Screen Samples, Heavy Fraction Materials, Lake Sharpe Testing Project, WCRM, 1987.

Material Classes in Initial Sort	Material or Artifact Classes in Second Sort	Size Grade Sorted From				
		G1	G2	G3	G4	G5
Modified Stone	Stone Tools	X	X	X	X	X
	Chipped Stone Flaking Debris	X	X	X	X	
Native Ceramics	Rim Sherds	X	X	X		
	Body Sherds	X	X	X		
	Other	X	X	X		
Vertebrate Fauna	Modified Bone	X	X	X	X	X
	Unmod. Identifiable Bone	X	X	X		
	Unmod. Unidentifiable Bone	X	X	X		
Shell	Modified Shell	X	X	X	X	X
	Unmod. Identifiable Shell	X	X	X	X	X
	Unmod. Unidentifiable Shell	X	X	X		
Fire-Cracked Rock	Check for Tools	X	X	X		
Natural Clinker	Check for Tools	X	X	X		
Burned Earth/ Fired Clay		X	X	X		
Ash		X	X	X		
Ochre/Pigment		X	X	X		
Miscellaneous Native Material	Glass Trade Beads	X	X	X	X	X
	Other Trade Glass	X	X	X	X	X
	Trade Metal	X	X	X	X	X
	Other	X	X	X	X	X
Miscellaneous Euroamerican (Recent) Material	Glass	X	X	X	X	X
	Ceramics	X	X	X	X	X
	Metal	X	X	X	X	X
	Other	X	X	X	X	X
Natural Rock	Check and Discard	X	X	X		
Unsorted Residue					X	X

unsystematic, extremely small-sized samples of debris. The <G5 debris was discarded after being examined for beads.

Upon completion of the sorting procedures, basic quantification by count or weight of all material and artifact classes was accomplished. The goal of this process is the production of detailed artifact inventories, as well as the generation of baseline analytic data. The specific quantification procedures and codes used for each artifact class in the inventory process are presented in Appendix E. The resulting artifact inventories with provenience data can be found in Appendices F-M.

Artifact Inventories

Five basic artifact inventories were generated by computer for each of the eight tested sites. Data base 1 provides information on native ceramics (pottery), data base 2 contains information on vertebrate faunal remains (bone), data base 3 is concerned with the major classes of lithic artifacts (stone tools, flaking debris, and fire-cracked rock), and data bases 4 and 5, referred to as miscellaneous 1 and 2, provide information on an assortment of other classes of artifacts and materials retained in the collections. The inventory data in each data base is preceded by provenience data concerning the location, recovery, and context of the listed material. All provenience and inventory data are keyed by site and catalog number in the respective files. Artifact inventory codes can be found in Appendix E. The artifact inventories with provenience data produced for each of the eight tested sites are listed in Appendices F-M.

Detailed Analyses

Selected artifact classes such as native ceramics, stone tools, flaking debris, identifiable and modified bone, and certain floral remains were subjected to more rigorous, detailed analytic procedures than the simple size-grading and quantification described above. Some of the models for these procedures follow those applied to the Big Hidatsa collection (Ahler and Swenson 1985:73-85), while others do not. Other exceptions include the simplification of certain analytic systems (e.g., stone tools) to better fit the requirements and scope of the 1987 Lake Sharpe testing project. The detailed analytic systems used in the present study are discussed in the following paragraphs.

Native Ceramics

The analysis of native ceramics or pottery began by separating these artifacts into rim sherd and body sherd groups. Body sherds are maintained in their size grade class for further analysis, with the exception of body sherds that can be conjoined with rim sherds. Rim sherds are treated on an individual basis. All individual rim sherds from a component are matched in an attempt to identify rims from the same ceramic vessel. Matches consist of both direct fits between conjoinable rims and unjoined rims that are basically

similar in form, decoration, and paste. Matched rims and single rims without a match are then referred to as "ceramic vessels."

Because of small sample sizes, rim sherds representing pottery vessels were not coded for computerized analysis. Rather, rim sherds and vessels are described and classified where possible according to established wares and types. Toward this end, the Middle Missouri ceramic key compiled by Johnson (1980), used in conjunction with relevant site reports, was most useful in the classification of Plains Village period ceramics. Variables used to classify rim sherds and vessels include (1) rim form, (2) area of decoration, (3) decoration technique, (4) decoration motif, (5) exterior rim surface treatment, and (6) lip form. These variables are based on the organization of Johnson's ceramic key. In the descriptive format developed for this report, area of decoration and decoration technique are combined under exterior rim decoration and lip decoration.

Body sherd surface treatments are recorded for size grade 1 and 2 (G1 and G2) specimens as part of the inventory process. Grade 3 specimens are usually too small for a definite determination of surface treatment. Surface treatment data are useful in distinguishing among the various archeological taxa of the ceramic period in the Middle Missouri subarea when viewed in conjunction with vessel ware and type information. Maximum thicknesses of size grade 2 body sherds were recorded so as to arrive at a simple, consistent value (mean maximum thickness) for each ceramic aggregate for purposes of making reliable intercomponent and intersite comparisons. Body sherd thickness has been shown to be a temporally sensitive variable in some cases (e.g., Ahler and Weston 1981:183-185); its systematic measurement here is intended to begin collecting data on the relationship between time and body sherd thickness in the Lake Sharpe area (cf. Toom 1989b).

Stone Tools

Stone tools were individually computer coded following a simplified version of the coding scheme in Ahler and Swenson (1985:310-313). Along with relevant provenience data, the variables recorded for all stone tools include (1) descriptive category, (2) sequence number (computer number), (3) technological class, (4) morphological class, (5) functional class, (6) use-phase class, (7) raw material type, (8) multipurpose (multifunction), and (9) weight. Detailed information on these variables can be found in Ahler and Swenson (1985:79-84) and appendices and references cited therein. The stone tool code used for this report is presented in Appendix N, as is a listing of the data recorded for each specimen in the site collections. Additional comments on important aspects of the stone tool analysis follow.

The main thrust of the stone tool analysis is the determination and interpretation of tool function(s). Because of this, the number of functional tool occurrences takes precedence over the number of discrete stone tool items. Therefore, the total number of tools stated in this report (i.e., functional tool occurrences) may exceed the actual number of stone tool artifacts. The reader is advised that discrepancies between real numbers of tools recovered and analytically generated tool frequencies are intentional and a by-product of this approach. Multiple edged flake tools, with each edge recorded as a separate functional occurrence, represent the greatest number of multifunctional tools in most typical site samples.

The initial placement of stone tools in various descriptive categories is simply a means of organizing the tools according to general technological and morphological characteristics for purposes of further study (Ahler and Swenson 1985:80). Descriptive categories in and of themselves are not considered to be useful analytic groups. The descriptive categories of relevance to this study are listed in Appendix N. A four-digit sequence number is assigned to each tool within the descriptive categories. This number, in combination with the descriptive category code, forms a six-digit number referred to as the "computer number" (Ahler and Swenson 1985:80). Computer numbers are labeled on the surface of each tool to provide a unique identification for individual tools.

Technological classes are a means of describing "a general technological trajectory or suite of technological permutations often applied in a complex fashion to produce a desired end product" (Ahler and Swenson 1985:82). In essence, technological classes provide succinct information on simple as well as complex stone tool manufacture operations and probable manufacture pathways. The ten technological classes used in this report are listed in Appendix N. Morphological classes, most of which relate to various projectile point types, are an attempt to succinctly capture the form of various tools and tool fragments (Ahler and Swenson 1985:80). The classes relevant to the present study are also listed in Appendix N. Morphological classes receive little attention in this report because all projectile point forms are classed as late prehistoric. More detailed descriptive and classificatory information on the recovered projectile points is provided in text.

The functional classification of stone tools is a complex operation involving macromorphological and micromorphological observations (Ahler and Swenson 1985:83). A total of 65 specific functional classes are currently recognized for Plains Village period and other collections in the Middle Missouri subarea based on the work of Ahler and colleagues. Specific functional classes provide detailed information on tool use and tool work material. These specific functional classes are collapsed into a number of general functional groups to facilitate summarization and intersite comparisons. Specific functional classes of relevance to this report are listed in Appendix N. Relevant general functional groups are identified in text and tables. Detailed definitive information on the specific functional classes can be found in Ahler and Swenson (1985:329-341); the specific class composition of all general functional groups is listed in Ahler and Swenson (1985:84).

Use-phase classification places each tool in one of four groups which provide information on its probable position in the manufacture-use-discard trajectory. The four use-phase classes, as presented in Ahler and Swenson (1985:81), are:

1. Unbroken, potentially useful; manufacture incomplete.

2. Broken or rejected; manufacture incomplete.

3. Unbroken, potentially useful; manufacture complete.

4. Broken, exhausted, or rejected; manufacture complete.

The number preceding each use-phase class is its code or numerical designation for purposes of tabular presentation of use-phase data.

Several basic lithic raw material types have been defined for the Middle Missouri subarea (e.g., Ahler 1977a). Raw material analyses are primarily concerned with the identification of local and nonlocal (exotic) lithic resources, and the determination of lithic resource utilization patterns for various archeological taxa. It is therefore necessary to approach raw material analyses from a regional or areal perspective in order to distinguish among local and distant resources. The lithic raw material types of relevance to the Lake Sharpe area are listed in Appendix N. This listing, grouped according to local and nonlocal lithic resources, is based on the work of Ahler (1989a) and Toom (1984a) in the immediate Lake Sharpe area, supplemented by data from Ahler (1977a) and Ahler and Swenson (1985:343-347). Detailed descriptions of these materials can be found in these sources.

Flaking Debris

Analysis of flaking debris follows procedures referred to as "mass analysis" (Ahler and Swenson 1985:85). Mass analysis emphasizes the generation of data on aggregates of flaking debris by size grade, rather than data on individual flake attributes. It provides information on general stone tool manufacture operations performed at each site, as well as providing data on raw material utilization that compliments that of the stone tool analysis. For purposes of this study, only limited mass analysis data were collected, including flaking debris and raw material type counts by size grade. Flaking debris frequencies were recorded for all samples, while raw material data were recorded for selected samples only for most sites, especially when the collections were relatively large and the cultural affiliation of small samples from ephemeral contexts was in doubt. These data are recorded for size grades 1-3 (G1-3) for dry screen samples (one-quarter inch screens) and for size grades 1-4 (G1-4) for water screen samples (one-sixteenth inch screens).

Other Detailed Analyses

The particulars of the analyses of identified macrobotanical specimens and identified and modified vertebrate faunal specimens are discussed in Appendices A and B, respectively. Information on selected profile (soil) descriptions and interpretations is presented in Appendix C.

IV. BACKGROUND INFORMATION

Introduction

This section presents background information on the physical (natural) and cultural settings of the Big Bend study unit (region) with particular reference to the Lake Sharpe project area. It includes discussions of physiography, flora and fauna, climate, human geography, culture history, previous archeological research, and National Register sites. Much of this material has been adapted from and/or taken directly from other archeological reports (i.e., Steinacher and Toom 1984a, 1985; Toom 1989a, 1989b; Toom and Artz 1985; Toom and Picha 1984).

Physiography

The physiography of the Middle Missouri subarea is dominated by the valley of the Missouri River. The present-day course of the Missouri represents the integration of three former drainage basins as a result of glacial diversion during the Pleistocene (Thornbury 1965:248-249). In North and South Dakota, the Missouri occupies a deep, narrow, trench-like valley that is cut into the Missouri Plateau, and is often referred to as the "Missouri Trench" (Flint 1955:14-15; Thornbury 1965:290-291).

In the Lake Sharpe project area, the Missouri Trench is approximately 7 km (4.3 mi) wide and ca. 115 m (380 ft) deep. Unquestionably, the most prominent physical feature of the trench in the project area is the "Big Bend" of the upper Missouri, from which the Big Bend region derives its name. In the years following World War II, a series of three dams and reservoirs was constructed by the U.S. Army Corps of Engineers along the Missouri in South Dakota. These are, in ascending order, Fort Randall Dam and Lake Francis Case, Big Bend Dam and Lake Sharpe, and Oahe Dam and Lake Oahe. These dams and their reservoirs have significantly altered the physiography of the Middle Missouri subarea in South Dakota, especially the low-lying features of the Missouri Trench. Lake Francis Case and Lake Sharpe have inundated substantial portions of the Big Bend region, while Lake Oahe covers large areas of the Bad-Cheyenne and Grand-Moreau regions, as they are defined by Lehmer (1971:28-29).

In the Dakotas, the Missouri River has cut its valley into the Missouri Plateau, a major feature of the Great Plains Province (Fenneman 1931; Hunt 1967; Thornbury 1965). The Missouri Plateau is essentially a flat plain into which drainage systems, most notably the Missouri, have carved steep hills, bluffs, and valleys. Relief over the Missouri Plateau is generally greater than in most other sections of the Great Plains.

Throughout much of South Dakota, including the Lake Sharpe area, the Missouri River trench lies at the interface of two distinct divisions of the Missouri Plateau, the Glaciated and Unglaciated Missouri Plateau sections, as was mentioned above. To the east of the trench is the Missouri Hills division of the Glaciated Missouri Plateau, commonly referred to as the "Coteau du Missouri" (Rothrock 1943:8; SDGS 1971a). The gently rolling hills of the

Coteau are mantled with Wisconsinan glacial drift. The numerous streams that dissect the region often cut deeply enough to expose Cretaceous bedrock that underlies the drift. The western margin of the Coteau, overlooking the Missouri River valley, is described as "a tattered fringe of high hills separated by sharp, canyon-like valleys" (Rothrock 1943:36-37).

West of the Missouri River trench lie the Pierre Hills (Rothrock 1943:47-48), a low relief landscape of smooth, rounded hills that is part of the Unglaciated Missouri Plateau. The hills are formed largely on the easily eroded, black shale of the Pierre Formation. Deposited in shallow Cretaceous seas, the shale has a total thickness of over 300 m (1000 ft) (Flint 1955:23). The great thickness and uniformly dark color of the shale impart a distinctive character to the Pierre Hills, which are often described using adjectives such as "somber," "monotonous and rather dismal," and "frowning" (Flint 1955:16; Rothrock 1943:47). The hills were never glaciated, except in a narrow band adjacent the trench, where scattered glacial boulders and isolated pockets of glacial till are found (Crandell 1953; Flint 1955).

At their interface with the Missouri River trench, the Pierre Hills are dissected by a labyrinthine network of steep-sided gullies and knife-edged ridges that descend toward the floor of the valley. The steep, rugged terrains that form the western and eastern margins of the trench are commonly referred to as the "Missouri Breaks" (Rothrock 1943:39).

From a geological perspective, the Missouri Trench is a fairly young feature of the landscape, first formed during the Illinoian stage of the Pleistocene epoch (Crandell 1953; Flint 1955). As the Illinoian ice mass advanced southward and westward across South Dakota, it blocked the predominantly eastward-flowing streams of the region. These streams, along with meltwater from the ice, were diverted southeastward along the ice margin. This event, which Flint (1955) has termed the "great diversion," established the present-day course of the Missouri River.

Following the retreat of the Illinoian glaciers, the Missouri River and its tributaries deepened and enlarged the trench. In the Lake Sharpe area, this process of entrenchment was interrupted at least once by glacial advances. In pre-Wisconsinan (Clayton and Moran 1982:60) or early Wisconsinan (SDGS 1971b) times, glaciers advanced west of the Missouri River throughout the Dakotas. The surviving evidence of this glaciation is largely restricted to a thin scatter of glacial boulders distributed over upland surfaces west of the river (Flint 1955:84-85). In the Lake Sharpe area, this band of scattered boulders extends some 8-32 km (5-20 mi) west of the river (Flint 1955:Plate 1). A later advance, thought to be early Wisconsinan (Clayton and Moran 1982:60; SDGS 1971b), deposited glacial drifts within and along the eastern margins of the trench. Glaciers of this advance failed to cross the trench, but may have entered it in a few places in South Dakota, including the Lake Sharpe area (cf. Crandell 1953:Plate 1).

Wisconsinan glaciers, although largely failing to cross the trench, contributed meltwater and outwash sediment to the Missouri River. Extensive runoff from glacial meltwater and the lower sea levels prevailing at the time resulted in downcutting of the river into underlying strata. This downcutting went through and exposed glacial outwash deposits and underlying bedrock of the Cretaceous period. Glacial outwash deposits can be seen today in the walls of the valley, particularly on the east side of the river. One or more

of these glacially induced episodes of increased fluvial activity are probably responsible for the formation of a high gravel terrace at elevations of about 472 m (1550 ft) above mean sea level (amsl) in the Lake Sharpe area (Crandell 1953; Flint 1955). Deposits of this gravel are often mined commercially. The Cretaceous bedrock exposed in the valley is composed of the Pierre Shale Formation, a highly fossiliferous stratum containing marine fossils. It is visible as black, steeply eroded slopes composed of weathered shale which turns to a slick, sticky clay when wet and a cracked, barren surface essentially devoid of vegetation when dry. No commercial use is presently made of these shale deposits.

In the Lake Sharpe area, the Missouri River trench, as it existed prior to dam construction, can be subdivided into four physiographically distinct zones: (1) tributary streams and valleys; (2) the Missouri Breaks; (3) the Missouri terraces; and (4) the Missouri floodplain and channel. Each of these zones is described in some detail in following paragraphs.

Tributary Streams and Valleys

Because the Missouri River was established against the margin of one of the great Late Pleistocene ice sheets, most of its major tributaries enter from the west. In the Lake Sharpe area, major western tributaries of the Missouri include the Medicine Creek and the Bad River. A number of lesser tributary streams with largely seasonal flows also feed the Missouri River from the west. Tributary streams entering from the east are generally less extensive and primarily intermittent. In addition to streams, numerous springs were once present in the valley, usually at the interface of the underlying shale and overlying glacial gravel deposits. Many of these are no longer flowing or are submerged beneath the reservoir. With the exception of the major tributaries (the Bad River and Medicine Creek), the valleys of the tributary streams in the project area are relatively narrow and short and flanked by steep slopes. The exceptions noted are the only tributaries with relatively wide, extensive valleys of their own that provide a more dependable and continuous flow of water.

The Missouri Breaks

Surface erosion and the downcutting of the Missouri and its tributary streams have created steep and heavily dissected slopes rising some 180 m (600 ft) in elevation above the river, a physiographic feature often referred to as the "Missouri Breaks" (Rothrock 1943:34-41). The Breaks are most evident on the western side of the trench in the Lake Sharpe area, although they are also present on the eastern side, particularly in the vicinity of the Big Bend. The northern side of the Big Bend proper is an area of this heavily dissected and rugged terrain. Hills and ridges in the Missouri Breaks are carved out of the Pierre Shale and often have thin caps of glacial till and/or loess. In some places, the river has cut its channel up against these hills and formed high, steep bluffs of shale. In most areas, the slopes and hills are abutted by a series of low-lying, gently sloping to flat terraces.

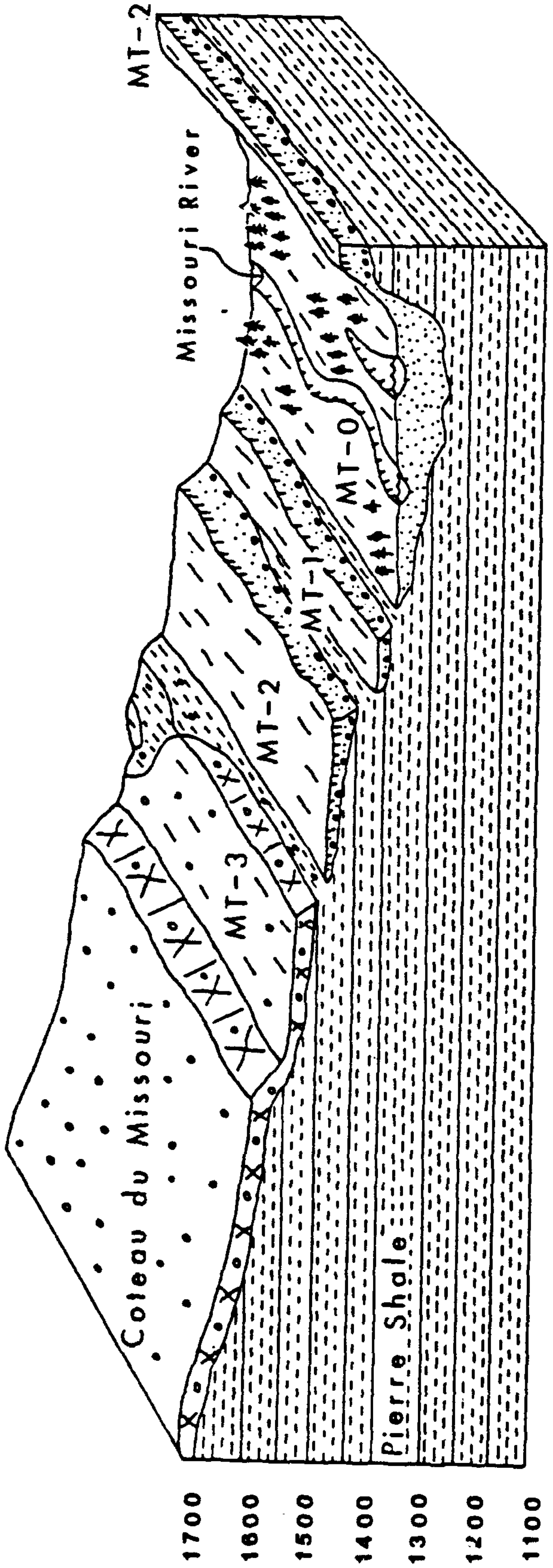
Missouri River Terraces

Terraces of the Missouri River dominated the terrain of the lower portions of the trench prior to dam construction. They comprise a complex series of Late Pleistocene and Holocene-age erosional (strath or rock-cut) and depositional (cut-and-fill) terraces (Coogan 1987). Virtually all of the archeological sites in the Lake Sharpe area are found in or on top of the river terraces. Extensive areas of river terrace are still a common feature along Lake Sharpe, which is a relatively small reservoir. This is generally not the case for the larger reservoirs such as Lake Oahe to the north and Lake Francis Case to the south, where the low-lying terraces have been more or less completely inundated.

Four terraces of the Missouri River have been identified and described in the Lake Sharpe area and beyond (Coogan 1987:53-62). They are labeled on the basis of elevation from the youngest, Missouri Terrace-1 (MT-1), the first terrace above the floodplain; to the oldest, Missouri Terrace-4 (MT-4), the highest upland terrace (Figure 5). The floodplain of the Missouri is designated the MT-0 in this system of nomenclature. The MT-4 is actually the western edge of the Coteau du Missouri, a high bench that flanks the east side of the Missouri River valley. The MT-4 and MT-3 are high-elevation terraces of erosional (strath or rock-cut) origin formed by the downcutting of the river during the Late Pleistocene. Both the MT-4 and the MT-3 are typically covered with glacial erratics; the lower elevation MT-3 is also mantled by loess. The MT-2 and MT-1 are low-elevation terraces thought to be principally of depositional (cut-and-fill) origin. The MT-2 and the MT-1 directly flank the former Missouri River floodplain and both are covered by an eolian silt cap (loess). The MT-2 loess cap can be quite thick, measuring well in excess of 2 m in some places.

Certain discrepancies are apparent in the strict interpretation of the MT-2 and the MT-1 as depositional terraces, and it may be best to view the processes of their formation as uncertain at this time. For example, there are indications in an earlier study that the MT-2 and the MT-1 may be, at least in part, strath terraces cut directly into Pierre Shale bedrock by lateral planation (cf. Coogan and Irving 1959:319-321). This alternative interpretation seems to be most applicable to those portions of the MT-2 and the MT-1 that are mapped downstream from the Big Bend proper. At Medicine Crow, which is just below the Big Bend, the presence of bedrock beneath the MT-2 fill and above the former baselevel of Missouri River channel clearly suggests a strath origin for the MT-2 at this location (Ahler 1989b).

In any event, the terrace in which most of the archeological sites are found, particularly Plains Village period sites, is the Late Pleistocene/Holocene-age MT-2. Coogan (1987:54-58) describes the MT-2 as an alluvial cut-and-fill terrace that is capped by loess. Under the depositional terrace model, the MT-2 was formed by an episode or episodes of backfilling in the Missouri Valley and subsequent downcutting or reentrenchment of the channel. It may, in part, owe its formation to the filling of a lake created by a temporary blockage of the river farther downstream during the Late Pleistocene (Coogan 1987:54-57). The MT-2 is composed of alluvium (gravels, sands, and clays) capped by loess (silt loam). The age of the alluvium is open to some question (Late Pleistocene/Early Holocene), but the loess cap is clearly Holocene in age. The thickness of the loess cap varies considerably from one locale to another; its thickness appears to relate primarily to specific



Terraces of the Missouri River Trench mapped between Fort Thompson and Pierre, South Dakota. Approximate elevations of the terraces are shown from the scale on the left. The Coteau du Missouri and MT-4 (not labelled) grade one into another. The terrace fills are generalized as sand and gravel (dots and circles) and silt cap (short vertical lines). The bedrock Cretaceous Pierre Shale underlies the terrace fills everywhere and may crop out at any level.

Figure 5. Terraces of the Missouri River Trench (from Coogan 1987:5).

physiographic features of the river channel and prevailing local wind patterns. The loess is thought to originate from channel deposits in the river (sandbars and islands). Under this scenario, the finer sediments in exposed channel deposits are entrained by strong winds, creating dust storms (c. . Clayton et al. 1976). This eolian material is then deposited on adjacent terrace surfaces which act as loess traps by reducing wind velocity as the dust clouds pass over these somewhat higher physiographic features.

Where erosion has truncated the MT-2 and exposed it in cross section, a number of dark, humic soil horizons (buried A horizons) marking ancient soils (paleosols) are typically seen in the loess cap. Archeological sites are most often found associated with these buried A horizons as well as with the surface A. Their eventual dating and correlation should provide a valuable aid for chronological assessments of cultural materials found in association with the A horizons (cf. Ahler et al. 1974; Clayton et al. 1976; Coogan 1984, 1987; Coogan and Irving 1959).

The Holocene-age MT-1 is also described by Coogan (1987:58-61) as a loess-capped alluvial cut-and-fill terrace. Like the MT-2, the MT-1 was formed by episodes of backfilling in the Missouri Valley followed by downcutting or reentrenchment of the channel under the depositional terrace model. Generally speaking, it is only visible today along the upper portion of Lake Sharpe, extending from Oahe Dam downstream to the mouth of Medicine Knoll Creek (Rousseau area).

Most of the terrace surfaces are presently dominated by soils of the Pierre-Promise-Lismas associations (Westin et al. 1959). The U.S. Soil Conservation Service (SCS) has assigned soils of the ey MT-2 terrace to the Lowry-Sully (Buffalo County), Lowry-Agar (Hughes County), and Lowry (Lyman and Stanley counties) associations (Borchers 1980; Schumacher 1987; Smalley 1975; Vialle 1985). These associations include deep, well-drained, silty soils (silt loams) formed in loess on nearly level to strongly sloping terrace and upland surfaces. Lowry series soils are classified as coarse-silty, mixed, mesic Typic Haplustolls (Schumacher 1987:159).

Missouri River Floodplain and Channel

Inundation of the former floodplain of the Missouri (MT-0) is essentially complete in the Lake Sharpe area. Except in periods of high water, the floodplain stood about 3-4.5 m (10-15 ft) above the former baselevel of the river channel. Today, only small portions of the floodplain are visible from Oahe Dam downstream to just beyond Pierre and immediately below Big Bend Dam at Ft. Thompson. The existing floodplain, as observed just below Oahe Dam, exhibits a hummocky surface topography due to the development of such features as sand dunes and floodplain scrolls. As defined here, the floodplain includes the surfaces of larger islands and sand bars that were once present in the river. Flint (1955:147) states that the Missouri flowed on a floodplain of silt and sand fill throughout South Dakota, and at no point was it flowing on bedrock. Depth to bedrock beneath the floodplain alluvium is variable, but only limited data of this sort are available and the depth of the deepest scour is unknown.

The floodplain was densely vegetated by trees and brush. This stands in marked contrast to the terrace surfaces which are predominantly covered by mixed grassland vegetation in the absence of cultivation. The tributary stream valleys are also wooded to some extent, and wooded draws are present along the terraces and in the more rugged terrain bordering the river.

The final major feature of the Missouri Trench in the Lake Sharpe area was the Missouri River channel itself. Before it was dammed, the Missouri was a fast flowing, turbid stream with an average width of 460 m (1500 ft). The channel contained numerous sandbars and large islands that were comprised of sand with loose silt caps. The flow of the river fluctuated considerably both seasonally and from year-to-year; annual flows varied between 10-37 million acre-feet (USACE 1977:II-2).

In South Dakota, prior to dam construction, the channel form was characterized as variable, with both meandering and straight reaches. Numerous subsidiary channels separated by bars were present, but these were not so common as to yield a braided pattern. The river carried a large suspended load consisting of sands, silts, and clays. The gradient through South Dakota was about one foot/mile. Erosion and deposition were thought to be in equilibrium before the river was dammed (Flint 1955:14-15). Erosion is clearly the dominant process today, as witnessed by the extensive shoreline erosion that is rapidly filling the reservoirs.

Flora and Fauna

The Missouri Valley of the Dakotas has been described as an extension or finger of the Eastern Woodlands (Shelford 1963), providing habitat for woodland communities in the midst of a great expanse of mixed grass prairie (Johnson and Nichols 1970; Kuchler 1964). The valley floor and sheltered slopes provide favorable locations for stands of timber, including eastern red cedar (juniper), cottonwood, willow, American elm, and box elder. Other woody plants found in the valley include common rose, fringed sage, silver sage, buffaloberry, American plum, chokecherry, and yucca. Even though woody species are present in considerable numbers, various grasses are the dominant native plant community covering most of the upland and terrace surfaces in the absence of cultivation. These include species of mixed grass prairie association such as western wheatgrass, blue grama, neddleandthread, green needlegrass, sand dropseed, side-oats grama, and buffalograss (Johnson and Nichols 1970; Kuchler 1964; Over 1932).

Changes in the composition, abundance, and distribution of native flora in the Middle Missouri subarea during the past 10,000 years are poorly understood. Paleobiotic studies from nearby areas, including northeastern South Dakota (Watts and Bright 1968) and southeastern North Dakota (Cvancara et al. 1971), indicate that grassland was established as the dominant floral community by 8000 B.C., replacing spruce and hardwood forests (cf. Bernabo and Webb 1977; Wendland 1978; Wright 1970). Since that time, there have undoubtedly been fluctuations in the composition and relative abundance of species, largely in response to climatic change. However, these fluctuations may have been less pronounced in the Missouri River trench because of the more dependable water supply provided by the river. For this reason, the valley

may have served as a refuge for human groups during periods of climatic stress in the Plains (cf. Frison 1975).

Prehistoric people undoubtedly exerted some influence on the natural flora. By at least A.D. 1000, Plains Village groups had introduced cultigens such as corn, beans, squash, sunflower, and tobacco to the trench (Benn 1974; Haberman 1984; Nickel 1974, 1977). Timber stands along the Missouri River were of primary importance to the villagers, not only as construction materials for the building of earthlodge villages, but also as fuel and raw materials for tools (Griffin 1977; Zalucha 1982, 1983). As a consequence of the demand for timber, Plains Village populations may have put considerable pressure on woodlands, perhaps affecting the density and distribution of certain trees in the valley (Weakly 1971). Fawcett (1988) presents a contrary view on potential bottomland timber depletion by Plains Villagers.

The native fauna of the Lake Sharpe area presently includes large mammals such as mule deer, white-tail deer, and pronghorn. In the past, other large mammal species included bison, elk, grizzly bear, and wolves; these species are no longer found in the region. Small mammal species include badger, red fox, mink, weasel, tree squirrel, ground squirrel, rabbit, coyote, raccoon, muskrat, skunk, beaver, prairie dogs, and a variety of rodents and insectivores (Over and Churchill 1941).

A number of waterfowl currently can be found in the Lake Sharpe area. These include permanent and migratory species such as Canada goose, mallards, pintails, teal, canvasbacks, redheads, white pelican, sandhill crane, and great blue heron. Other large birds found in the area are eagles, owls, and hawks. Songbirds are abundant and include warblers, swallows, sparrows, thrushes, and western meadowlarks. Native game birds include grouse, prairie chicken, and bobwhite quail. Pheasant, now abundant, were introduced in historic times (Whitney 1978).

Reptiles and amphibians are represented by a number of species of lizards and snakes, most notably the bull snake and prairie rattlesnake, and by various turtles, frogs, and toads. Fish such as channel catfish, white bass, suckers, and paddlefish are native to the Missouri River. In historic times, carp, walleye, and northern pike have been introduced. Mussels are also present in the Missouri and its tributary streams (Over 1915; USACE 1976, 1977). As with the flora, little has been accomplished in the reconstruction of the past faunal ecology of the area other than the compilation of general lists of species taken by its prehistoric occupants (Falk 1977; Parmalee 1977; Semken and Falk 1987). One can expect that the composition, abundance, and distribution of faunal communities in area varied in response to changes in climate, much like the variability predicted for the flora. There is no question that human predation has also had a very significant impact on certain species of native fauna, particularly the larger game animals.

Climate

Seasonal patterns in the movements of three continental-scale air masses largely determine the climate of the Middle Missouri subarea. In winter, air masses originating in the northern polar regions bring cold, arctic air into the region. In summer, warm air flows northward from the Gulf of Mexico. At any time of year, dry, westerly air masses can sweep eastward, blocking flows of moisture-laden air from the Gulf and the Arctic. If persistent, the westerly flows can induce drought (Borchert 1950).

The modern climate is characterized by drastic seasonal and year-to-year fluctuations in temperature and precipitation. At Pierre, South Dakota, the mean annual temperature is 46.3° F. The average daily temperature in January, the coldest month, is 15.1° F; in July, the warmest month, the average daily temperature is 75.1° F. The highest temperature recorded at Pierre is 113° F; the lowest recorded is -33° F. As an indication of the marked seasonal fluctuations in climate, both of the above extremes in temperature were recorded in the same year, 1966. In five years out of 10, the first and last frosts occur before May 8 and after October 6, respectively, defining a growing season of at least 151 days. Average annual precipitation at Pierre is 45.5 cm (17.90 in), 80% of which falls between April and September. Much of this total is delivered by thunderstorms. Average annual snowfall is 73.7 cm (29.2 in). Two years in ten receive less than 38.1 cm (15 in) of rain; two years in ten receive more than 50.8 cm (20 in) (Borchers 1980:1, 82-83).

Little is actually known of past climatic fluctuations in the Middle Missouri subarea. A chronology of climatic change proposed by Bryson and colleagues (e.g., Baerreis and Bryson 1965a, 1965b; Bryson 1966; Bryson and Wendland 1967; Bryson et al. 1970; Wendland 1978; Wendland and Bryson 1974) has gained some currency in the archeological literature of the region (e.g., Ehrenhard 1972; Lehmer 1970). This chronology is founded on statistical analyses of a global sample of radiocarbon dates (Bryson et al. 1970; Wendland and Bryson 1974). The analyses identify several relatively brief intervals during which significant changes occurred throughout the northern hemisphere in a number of climatically sensitive indicators, including vegetation, sea levels, glaciers, and archeological cultures. Building largely from a meteorological model proposed by Bryson (1966), Bryson and co-workers suggest that the episodes of climatic change reflect transitions in upper atmospheric circulation patterns, affecting the movement of air masses on a global scale.

This model of climatic change, supplemented by palynological evidence from the upper midwest, provides general insights into Holocene (post-8000 B.C.) paleoenvironments of the Lake Sharpe area and beyond (Table 6). At about 10,000 B.C., during the Late Glacial episode, the spruce forests of the Late Pleistocene extended at least as far west as the Nebraska Sandhills (Watts and Wright 1966) and as far south as northeastern Kansas (Gruger 1973). From ca. 9500-8500 B.C., the Lake Sharpe area is mapped as a conifer-hardwood forest (Wendland 1978:276). However, by about 8000 B.C., during the Pre-Boreal episode, these forests had retreated from all but the extreme eastern portion of South Dakota, and a grassland flora, similar to that of today, was established over the rest of the state (Watts and Bright 1968). Replacement of the conifer-hardwood forests by grassland was complete by the beginning of the Boreal episode at ca. 7300 B.C.

Table 6. Postulated Climatic Episodes and Events in the Lake Sharpe Project Area (abstracted from Wendland 1978).

Dates	Episode	Events
10,000 B.C.		
	Late Glacial	Cooler, wetter than present, conifer-hardwood forest.
8000 B.C.		
	Pre-Boreal	Warming trend, replacement of conifer-hardwood forests by grassland.
7300 B.C.		
	Boreal	Increasingly continental climate, grassland predominates.
6500 B.C.		
	Atlantic	Much drier and warmer climate, more Pacific and less Arctic airflow, maximum expansion of grassland.
3100 B.C.		
	Sub-Boreal	Increased precipitation, cooler, more Arctic airflow.
800 B.C.		
	Sub-Atlantic	Climatic deterioration.
A.D. 300		
	Scandic	Warming trend, transition period.
A.D. 700		
	Neo-Atlantic	Increased moisture, warming trend peaks.
A.D. 1100		
	Pacific	Return to drier conditions.
A.D. 1550		
	Neo-Boreal	Cooler, wetter climate, Little Ice Age.
A.D. 1850		
	Recent	Present conditions.

Between ca. 6500–3100 B.C., a period of much warmer and drier conditions prevailed, marking the Atlantic or Altithermal episode. A substantial decrease in human occupation of the plains during this interval has been hypothesized (Frison 1975) and possibly demonstrated (Benedict 1979), although others (Reeves 1973) have disputed the hypothesis. During the Atlantic climatic optimum, the Missouri River trench may have provided a refuge for some floral, faunal, and human populations of the Northern Plains.

Following the Atlantic episode, a climate similar to that of the present was established. Basic weather patterns and vegetation communities probably achieved some measure of stability in their present configurations by about 2000 B.C. (Wendland 1978:281). However, within this late Holocene interval, there have been fluctuations both above and below the present-day "norm." The Sub-Boreal episode (ca. 3100–800 B.C.), which succeeds the Atlantic, was typified by cooler, moister conditions. Climatic deterioration set in once

again during the Sub-Atlantic episode at ca. 800 B.C. and persisted until about A.D. 300. The succeeding Scandic episode (ca. A.D. 300-700), essentially a transition period, is characterized as a warming trend. The Neo-Atlantic episode (ca. A.D. 700-1100) witnessed a peak in the warming trend and the establishment of very favorable conditions that were apparently somewhat moister than later episodes. It was during this episode that Plains Village peoples first appear in the Middle Missouri subarea of South Dakota (Lehmer 1970). A return to drier conditions is proposed for the succeeding Pacific episode (ca. A.D. 1100-1550). The Neo-Boreal (ca. A.D. 1550-1850), also known as the "Little Ice Age," was characterized by a shift to a cooler and wetter climate. The Recent episode (ca. A.D. 1850-present) saw the establishment of present day climatic conditions.

Bartlein and Webb (1982) analyzed modern and fossil palynological data to estimate annual precipitation patterns over the upper midwest at 7050 B.C. (Early Holocene), 4050 B.C. (Middle Holocene), and 1050 B.C. (beginning of the Late Holocene). Their estimates for northeastern South Dakota, based on the pollen record from Pickerel Lake (Watts and Bright 1968), provide an impression of the relative magnitude of Holocene climatic changes in the region and are probably generally relevant to the Lake Sharpe area (Toom and Artz 1985:21-22). At 7050 B.C., annual precipitation at Pickerel Lake was ca. 57.7 cm (22.72 in), quite close to the present day average of 53.9 cm (21.22 in). At 4050 B.C., during the warm, dry Atlantic episode, annual precipitation was 43.7 cm (17.20 in), 19% less than at present. By 1050 B.C., during the cool, moist Sub-boreal episode, annual precipitation had risen to ca. 53.4 cm (21.02 in), near the modern average (Bartlein and Webb 1982).

Human Geography

Little impact upon the natural environment of the project area can be demonstrated for the first several millennia of human occupation. Suggested low population densities and simple technologies seem to have kept the inroads of human utilization of the area to a minimum. It is not until the area was occupied by village-dwelling horticulturalists around A.D. 1000 that human impacts are potentially manifest. Increased exploitation of timber resources may have affected the density and distribution of certain species of trees during the Plains Village period (Weakly 1971:42; but cf. Fawcett 1988). Increased population pressures and horticultural practices may have also had an impact on other native flora species. The native fauna would almost certainly have been affected by increased hunting pressures.

Euroamerican exploitation of the area began a process of drastic change in the valley and elsewhere on the Plains. The establishment of trading posts, military posts, farms, ranches, and towns resulted in deforestation of the floodplains, drastic reductions in local faunal populations, and the breaking of the natural prairie sod cover for agriculture. All of these factors significantly altered the physical environment. The fur trade, with its satellite stations such as Fort George, steamboat traffic, and military occupation initiated these changes (Smith 1968; Smith 1984; Wood 1984). Permanent Euroamerican settlement of the area beginning in the late nineteenth century lead to further and more drastic alterations of the landscape. Today, the area contains four population centers: Pierre, the State Capitol (population 9699); Fort Pierre (population 1448); Lower Brule (population

300); and Fort Thompson (population 264). The first two communities are predominantly occupied by Euroamericans, while the latter two are Indian reservation towns (Lower Brule Sioux and Crow Creek Sioux Reservations, respectively). Numerous small farms and ranches are located between these larger settlements.

Major transportation routes in the project area include State Highway 34, State Highway 1806, and the Chicago and Northwestern Railroad. Most of the area is crisscrossed with secondary roads typically constructed on section lines. Present land use is principally restricted to farming and ranching. Both dryland and irrigation farming are used to grow corn, milo, wheat, alfalfa, and other crops. The principal livestock are cattle, although some pigs and sheep are also raised. The area has little heavy industry and light industry is also uncommon. Government service, both state and federal, provides most employment opportunities. Other employment opportunities originate from the service and agricultural sectors.

The greatest human impact on the physical environment of the area has certainly been the construction of Big Bend Dam at Fort Thompson and the creation of Lake Sharpe (Big Bend Reservoir) by the U.S. Army Corps of Engineers. The lake extends about 80 river miles upstream from Fort Thompson to the vicinity of Pierre. It contains approximately 1,910,000 acre-feet of water and has a mean pool level of 1420 feet amsl, which fluctuates only a few feet throughout the year (USACE 1976:13). On the positive side, the dam and reservoir provide power generation (468,000 kilowatts), flood control, irrigation, and recreation. However, the acquisition of these benefits resulted in the flooding of thousands of acres of fertile bottomland and the destruction of innumerable archeological sites, including extensive earthlodge villages. The continued operation of the dam and reservoir is causing the rapid erosion of the low-lying terraces that once bordered the Missouri, especially the MT-2, resulting in the further destruction of arable land, native prairie, and many archeological sites located in and on these terraces.

Culture History

The Middle Missouri subarea has been a major focal point of human occupation and exploitation of the Northern Plains for several millennia because of its importance as a primary, diverse resource base and natural transportation route (i.e., the Missouri Valley). Identified archeological sites in the subarea represent six major cultural periods: (1) the Paleoindian period (10,000-6000 B.C.), (2) the Plains Archaic or Foraging period (6000 B.C.-A.D. 1), (3) the Plains Woodland period (A.D. 1-1000), (4) the Plains Village period (A.D. 1000-1862), (5) the Early Historic Period (A.D. 1700-1860), and (6) the Late Historic period (A.D. 1860-present). Documented archeological sites in the Lake Sharpe project area relate to each of these cultural periods, with the exception of the Paleoindian period. The salient characteristics of the archeological taxonomic system developed for the Lake Sharpe project area are summarized in Figure 6.

The archeological components identified at the sites reported here are all associated with the Plains Woodland and Plains Village periods. These two periods are collectively referred to in a generic sense as the ceramic period, because their most characteristic artifacts are native manufactured pottery.

Cultural Pattern	Taxonomic Subdivisions	Technology	Settlement	Subsistence
Euro-american ca. A.D. 1743-present	French English American	Industrial	Permanent posts, forts, homesteads, towns, cities	Mechanized agriculture
Equestrian ca. A.D. 1720-1876	Sioux Cheyenne Arapaho	Chipped & ground stone, bone, antler, wood, shell tools Basket & skin containers Euroamerican trade goods	Impermanent camps, villages Shelter-skin tipi	Nomadic mounted (horse) Hunting (bison) Gathering (wild plants)
Plains Village ca. A.D. 900-1862	<u>Middle Missouri tradition</u> Initial variant Extended variant Terminal variant (various named phases for each variant) <u>Coalescent tradition</u> Initial variant Extended variant Post-Contact variant Disorganized variant (various named phases for each variant) For Late Period Arikara Mandan Hidatsa	Chipped & ground stone, bone, antler, wood, shell tools Basket, skin & ceramic containers Euroamerican trade goods in Late sites	Permanent villages Shelter-earthlodges Impermanent camps Early period shelter-unknown Late period shelter-skin tipi	Early periods Semi-nomadic pedestrian Hunting (bison, deer, antelope) Gathering (wild plants) and horticulture (maize, beans, squash, sunflowers) Late period addition of mounted (horse) hunting to Early period practices
Plains Woodland ca. A.D. 1-900	Sonota Complex & other unformalized groupings	Chipped & ground stone, bone, antler, shell tools Ceramic containers	Semi-permanent camps(?) Shelter-circular lodges of brush/skin covering Impermanent camps Shelter-unknown Burial mounds	Nomadic pedestrian Hunting (bison, deer, antelope) Gathering (wild plants) and incipient horticulture(?)
Plains Archaic ca. 6000 B.C.-A.D. 1	Various notched & unnotched projectile point style associated complexes	Chipped & ground stone, bone, antler tools	Impermanent camps Shelter-unknown	Nomadic pedestrian Hunting (bison, deer, antelope) Gathering (wild plants)
Paleo-indian ca. 10,000+ B.C.-6000 B.C.	Various lanceolate projectile point style associated complexes (i.e., Clovis, Folsom, Scottsbluff, Alberta, etc.)	Chipped & ground stone, bone, antler tools	Impermanent camps Shelter-unknown	Nomadic pedestrian hunting (mammoth, bison) Gathering(?)

Figure 6. General Cultural Taxonomic System for the Lake Sharpe Project Area (from Steinacher and Toom 1984:26).

An overview of the Plains Woodland and Plains Village periods is given below from the perspective of the study region and the project area. Some of this material has been adapted from Steinacher and Toom (1984a, 1985) and Toom and Picha (1984). The Sonota complex report by R. W. Neuman (1975) was heavily drawn on for information on the Plains Woodland period. The La Roche site report also contains an insightful discussion on Plains Woodland manifestations in the subarea and surrounding regions of the Plains (Hoffman 1968:67-69). Information in the seminal work on Middle Missouri Village archeology by D. J. Lehmer (1971) serves as the basis for the Plains Village period discussion. The interested reader is referred to Smith (1984), Steinacher and Toom (1984a, 1985), Toom 1989a, and Toom and Picha (1984) for general discussions on those cultural periods not considered in any detail in the present report.

Plains Woodland Period
(A.D. 1-1000)

Sites assignable to the Plains Woodland period are rather common in the Middle Missouri subarea (e.g., Ahler et al. 1981; Ahler et al. 1982; Gant 1967; Hoffman 1968; Hurt 1952; Neuman 1960, 1961a, 1961b, 1964, 1975; Smith 1975, 1977; Steinacher and Toom 1984a; Toom 1989b; Wood 1960; Wood and Johnson 1973), although they are not nearly as numerous as later Plains Village period sites. Known sites of the period include burial mounds and campsites (Neuman 1975:89). Other site types such as activity areas are also undoubtedly represented, and the house remains recorded at the La Roche site are at least suggestive of semipermanent villages (Hoffman 1968:7-8; Neuman 1975:82-83). Mound sites would appear to be the more numerous of the two primary site types, but this is probably a result of their more conspicuous nature. Campsites are typically rather deeply buried in the MT-2 loess cap (anywhere from 50-200 cm) and are not nearly as evident as mounds or later Plains Village period sites.

In reality, our knowledge of the Plains Woodland period is greatly lacking in detail in a number of respects. This is especially true of the Lake Sharpe area where previous Plains Woodland research has focused on mound sites, and little substantive work has been accomplished at the few recorded habitation sites. The period seems to be divisible into early and late time frames in the Middle Missouri subarea on the basis of associated projectile points. Recognizable ceramic variability is also a likely possibility, but this remains to be demonstrated. Early period assemblages typically contain side-notched dart points (Besant/Sonota Side-Notched type) like those associated with the Sonota complex, an early Plains Woodland manifestation that is best known from sites located well to the north of Lake Sharpe (Neuman 1975). Sonota pottery does not differ from that generally associated with the Plains Woodland period. It typically consists of conoidal-shaped vessels exhibiting cord marked surface treatment and rims decorated with finger or stick punctates (Neuman 1975:93). Dentate stamping is also a recognized but minor decorative technique and some vessel surfaces are smoothed or plain. The age of the Sonota complex is estimated at ca. A.D. 1-600 (Neuman 1975:88).

Late period assemblages appear to exhibit small side-notched (and side-to-corner-notched) arrow points (Toom, this report) that are similar to the Avonlea, Prairie Side-Notched, and Samantha Side-Notched types of the Northern Plains (Kehoe 1966, 1973; Kehoe and McCorquodale 1961; Reeves 1970, 1983).

Nothing is known for certain about late Plains Woodland pottery in the Lake Sharpe area, but it is possible that it may be most similar to early Plains Village (Initial Middle Missouri) pottery. A few sherds from what appears to have been a globular-shaped vessel were found in the upper fill of a late Plains Woodland burial mound at the Windy Mounds site (39LM149) (Toom, this report). The direct association of this pottery with the construction of the mound is open to some question, but it does suggest that late period potters may have adopted the vessel form that is most characteristic of the Plains Village period. A somewhat analogous situation has been recognized at late Plains Woodland sites on the Cross Ranch in the Middle Missouri subarea of North Dakota. At these sites, ceramics exhibiting a relatively unique constellation of attributes have been found in association with early arrow point forms that are most like variations of the Prairie Side-Notched type (Ahler et al. 1982:241-258). However, the late Plains Woodland vessels at Cross Ranch were possibly conoidal or subconoidal, which is most consistent with the typical Woodland vessel form. While the available evidence is slim at best and difficult to interpret with any certainty at the present time, one can begin to see changes in material culture late in the Plains Woodland period that trend toward later developments in the Plains Village period. The late Plains Woodland period is estimated to date to ca. A.D. 600-1000 in the project area.

The Plains Woodland period is generally viewed as a time of innovation during which many new technological, economic, and social elements make their appearance in the subarea. Subsistence is reminiscent of the broad spectrum foraging of the preceding Plains Archaic period, although an emphasis on bison hunting is apparent and suggests a return to a more specialized hunting pattern. Incipient horticulture may also have been a component of Plains Woodland subsistence, although direct evidence is lacking or inconclusive (Hoffman 1968:67; Neuman 1975:89). It is generally believed that by the close of the period, horticulture would have been practiced or at least known (cf. Wedel 1961:284-285). Other innovations of importance include ceramics, semipermanent dwellings (and by inference semipermanent camps or villages), the bow and arrow, and mortuary ceremonialism as evidenced by elaborate mound burials. All of these traits suggest a more complex, stable, and sedentary lifeway than was present during the preceding periods (e.g., Hoffman 1968; Neuman 1975; Syms 1977; Wood and Johnson 1973).

Most Plains Woodland innovations are thought to have diffused in some form into the subarea from the Eastern Woodlands (Caldwell and Henning 1978). Their development is seen as either a local one stimulated by outside influences and contacts, the actual movement of Woodland peoples into the subarea, or some combination of both processes. With the apparent exception of mound burials, all of these innovations become more fully developed during the succeeding Plains Village period, representing integral parts of Plains Village lifeways. The population of the subarea also appears to be on the increase during this period, as the greater number of sites would seem to indicate.

Plains Woodland mound sites were at one time rather common in the project area, especially along the higher terraces and benches overlooking the Missouri in the vicinity of Ft. Thompson. The construction of Big Bend Dam and related archeological activities has left only a remnant of this extensive group of mounds intact. Habitation sites were not frequently identified, and most that were once known have been destroyed by dam and reservoir

construction. Two of the sites reported here contain late Plains Woodland period components estimated to date from ca. A.D. 600-1000 on the basis of associated arrow point types. The Windy Mounds site (39LM149) contains two burial mounds inferred to be of late Plains Woodland age. A habitation component of the same age, consisting of some sort of short-term campsite occupation or activity area, has been identified at the Sitting Buzzard site (39ST122). The unknown prehistoric component at the Ghost Lodge site (39ST120) is also probably a Plains Woodland manifestation on the basis of stratigraphic correlation.

Plains Village Period (A.D. 1000-1862)

In terms of sheer numbers of archeological sites, the Plains Village period stands out as the preeminent native cultural phenomenon in the Middle Missouri subarea (cf. Lehmer 1971). The period encompasses the late prehistoric and early historic time frames, and a complex taxonomic system has been developed to account for the considerable archeological variability within the period (Lehmer 1971; Lehmer and Caldwell 1966). The Plains Village period includes the prehistoric Middle Missouri tradition and the prehistoric-protohistoric-historic Coalescent tradition. The two traditions, which are actually minor traditions of the major Plains Village cultural tradition or pattern, are divided into seven variants (Table 7). In addition to these variants, several phases and other taxonomic subdivisions have also been named (e.g., Calabrese 1972; Caldwell and Jensen 1969; Lehmer 1971:201-206; Lovick and Ahler 1982; Smith 1977). However, with the exception of the Post-Contact variant, phase definition has lagged considerably and the variant persists as the primary analytic unit for most Middle Missouri Village research. While the major framework of Lehmer's taxonomic system for the Plains Village period is still a very useful research tool, continuing research in the subarea makes it clear that revisions are needed, particularly in regard to definition of taxonomic units and estimated temporal parameters (e.g., Ahler 1975; Falk and Calabrese 1973; A. Johnson 1977, 1979; Lovick and Ahler 1982; Steinacher 1984; Thiessen 1977; Toom 1987, this report; Zimmerman 1981).

Plains Village tradition sites are best known as extensive earthlodge villages, consisting of both fortified and unfortified sites. Other, less well known site types include winter villages, isolated earthlodges, semipermanent hunting camps, other campsites, burial grounds or cemeteries, and activity areas. Outstanding features of the Plains Village tradition include a semisedentary settlement pattern with seasonally occupied, permanent earthlodge villages, and a mixed subsistence strategy based on horticulture (garden agriculture), hunting (especially bison), and gathering. The garden produce of the villagers included corn, beans, squash, sunflower, and tobacco. The innovations noted above during the Plains Woodland period (e.g., increased sedentism, horticulture, ceramic manufacture, the bow and arrow, and domestic architecture) all manifest themselves in more fully developed and complex forms in Plains Village culture. It is also evident that overall social complexity in traditional Amerindian lifeways reached its height in the subarea during the Plains Village period (cf. Lehmer 1971).

Table 7. Chronological Model of Plains Village Culture Traditions and Variants in the Middle Missouri Subarea (adapted from Lehmer 1971:33).

Major Cultural Tradition (Pattern)	Tradition	Variant	Estimated Date Range*
Plains Village	Middle Missouri	Initial	A.D. 1000-1300
		Extended	A.D. 1000-1500
		Terminal	A.D. 1500-1675
	Coalescent	Initial	A.D. 1300-1500
		Extended	A.D. 1500-1675
		Post-Contact	A.D. 1675-1780
		Disorganized	A.D. 1780-1862

*Some of the date ranges stated by Lehmer have been modified to reflect new information and interpretations in Thiessen (1977) and Toom (1987, this report).

While essentially homogeneous in basic settlement-subsistence patterns and technology (Wood 1974), the Plains Village tradition exhibits a wide variety of formal and stylistic diversity, which forms the basis for the detailed taxonomic system outlined above and discussed in some detail in the following paragraphs. This diversity is the result of both time depth and accelerated cultural dynamics during late prehistoric and early historic times in the Middle Missouri subarea.

The origins of village life in the Middle Missouri are linked rather tenuously to developments in the Eastern Woodlands and the expansion of sedentism and agriculture to the margins of the Northern Plains at about A.D. 900, ostensibly under the distant impetus of Mississippian culture (cf. Anderson 1987; Lehmer 1971:97-100; Tiffany 1983). Fully developed village culture is first seen in the subarea proper with the emergence of the Initial Middle Missouri variant in the Big Bend region of South Dakota. Lehmer (1971:96) places the first appearance of the Initial Middle Missouri variant in the Big Bend region at ca. A.D. 900, although more recent studies indicate somewhat later beginning dates of A.D. 950 (Thiessen 1977) or even A.D. 1000 (Toom 1987, this report). The Extended Middle Missouri variant was established at about the same time or shortly thereafter in the subarea in both North Dakota and South Dakota.

Some have speculated that Initial and Extended Middle Missouri peoples migrated to the Missouri Valley in the Dakotas from northwestern Iowa and southwestern Minnesota (A. Johnson 1977:16; Lehmer 1970:118, 1971:97-100). Others have more recently argued for an in situ development from a generalized late Woodland (Great Oasis) base largely through processes of diffusion (Anderson 1987; Tiffany 1983). The Initial Coalescent variant, which is most closely related to the Central Plains tradition, is seen as the next major population movement (or development) into the subarea at ca. A.D. 1300. This apparent migration is linked to a prolonged period of drought (Lehmer 1970, 1971).

The establishment of the Initial Coalescent variant in the Big Bend region of South Dakota more or less coincides with the decline of the Initial Middle Missouri variant and the withdrawal of Extended Middle Missouri groups upriver. The original Initial Middle Missouri population appears to have been absorbed by the more vigorous Extended Middle Missouri groups at this time. The succeeding Extended Coalescent variant is interpreted as a direct outgrowth of the Initial Coalescent variant, just as the Terminal Middle Missouri variant is viewed as the direct successor of the Extended Middle Missouri variant and remnants of the original Initial Middle Missouri population. Extended Coalescent variant groups continued to expand upriver to the present-day North Dakota-South Dakota state line. Terminal Middle Missouri villages are essentially restricted to the Missouri Valley in south-central North Dakota.

In Lehmer's view, these movements of various village peoples within the subarea caused culture contacts and exchanges that resulted in a general leveling of differences in material culture. The end product of this process of "coalescence" is the eventual development of the Post-Contact Coalescent variant (ca. A.D. 1675-1780), which is found throughout the Middle Missouri subarea. These contacts were not always peaceful, however, as indicated by the presence of heavily fortified villages (Caldwell 1964; Lehmer 1971), and the recently discovered massacre of what appears to be an entire village population at the Crow Creek site (39BF11) (Zimmerman 1981). The coalescence process becomes fully manifest in the historically known Arikara, Mandan, and Hidatsa village tribes (Lehmer 1971; Meyer 1977). The Arikaras are widely recognized as the village tribe that occupied the subarea in South Dakota, including the Lake Sharpe area. However, after the widespread and devastating smallpox epidemic of A.D. 1780-1781, they effectively abandoned the area and moved farther upriver (Krause 1972:14-15; Lehmer 1971:170ff; Smith 1977:156; Wedel 1961:201-203). Depredations by mounted nomadic tribes, particularly the Sioux, are also believed to be responsible for the abandonment of the Big Bend region by the Arikaras during the latter part of the eighteenth century. No known village sites in the project area are thought to post-date ca. A.D. 1780.

The Post-Contact Coalescent variant in South Dakota has been divided into four phases on the basis of ceramic variability and geographic location: (1) the Felicia phase (ca. A.D. 1675-1700), (2) the Talking Crow phase (ca. A.D. 1700-1750), (3) the Bad River phase (ca. A.D. 1675-1795), and (4) the Le Beau phase (ca. A.D. 1675-1780) (Lehmer 1971:133-135, 201-203). Sites assigned to the Felicia phase, the short-lived antecedent to the Talking Crow phase, are sometimes lumped with those of the succeeding Talking Crow phase (cf. Lehmer 1971:133-135, 201). All four Post-Contact phases are or were represented by village sites in the Lake Sharpe project area (Lehmer 1971:135). The Talking

Crow phase was centered in the lower portion of the Big Bend region, and most Post-Contact village sites in the project area are assigned to this phase, especially those in the vicinity of the Big Bend and Ft. Thompson. The Talking Crow phase is characterized by ceramic assemblages with a preponderance of Talking Crow ware types (e.g., Johnson and Toom 1989; Smith 1977). Two Talking Crow phase villages have also been recorded on the east (left) bank of the Bad-Cheyenne region. Smith (1977:154) has estimated the age of the Talking Crow phase in the Big Bend region at ca. A.D. 1725-1780, which differs somewhat from Lehmer's assessment of ca. A.D. 1700-1750.

Bad River phase sites are also common to the project area along the upper reaches of Lake Sharpe in the vicinity of Pierre. The Bad River phase, which was centered in the Bad-Cheyenne region, is characterized by ceramic assemblages dominated by Stanley ware pottery types (Hoffman and Brown 1967; Lehmer 1954; Lehmer and Jones 1968). In addition, the Bad River phase has been further divided into two subphases, Bad River 1 (ca. A.D. 1675-1740) and Bad River 2 (ca. A.D. 1740-1795) (Lehmer 1971:202; Lehmer and Jones 1968:95-98). Subphase definition is based on the presence (Bad River 2) or absence (Bad River 1) of village fortifications and estimated chronological position. Bad River 2 sites are thought to be later in time due to the presence of horse bones and a more diverse array of European trade goods, including recognizable European manufactures such as gun parts. Hoffman (1970, 1972) has argued against the subdivision of the Bad River phase using these criteria. Ceramic assemblages of the Le Beau phase, situated primarily in the Grand-Moreau region, contain a "hybrid" of Stanley ware and Talking Crow ware types (Lehmer 1971:203). Le Beau phase sites are also present along the east bank of the Missouri in the Bad-Cheyenne region, and two Le Beau phase sites have been recorded in the project area.

During the protohistoric and early historic time frames (ca. A.D. 1675-1860), the development of the fur trade caused fundamental changes in Plains Village lifeways, as well as the lifeways of all other Amerindian groups on the Plains. The acquisition and trade of European manufactured goods became a major aspect of village economies, to the point where such activities caused significant alterations throughout the entire social fabric, particularly in areas related to settlement, subsistence, technology, and, perhaps, social organization (Ahler and Toom 1989; Berry 1978; Deetz 1965; Ewers 1954, 1968; Goulding 1980; Hoffman 1977; Toom 1979; Wood 1972, 1974, 1980). European epidemic diseases were also introduced into the subarea at this time. These had a particularly disastrous impact on traditional village culture, especially the 1780-1781 "smallpox" epidemic, resulting in severe population loss and extreme cultural disruption, and thereby reducing Plains Village peoples to a mere shadow of what they had once been (Lehmer 1971; Meyer 1977). Village sites occupied after the widespread 1780 epidemic are assigned to the Disorganized Coalescent variant (ca. A.D. 1780-1862) (Lehmer 1971). As a result of these historical processes of change, the Plains Village period is brought to a close at A.D. 1862 with the amalgamation of the surviving Arikaras, Mandans, and Hidatsas into a single village at Like-a-Fishhook in North Dakota, their last traditional earthlodge settlement (Smith 1972).

Plains Village sites were once common along both sides of the Missouri throughout much of the Middle Missouri subarea (cf. Lehmer 1971), particularly on and in low-lying terraces at localities adjacent to extensive bottomlands and near tributary streams. The majority of the sites that were once present along the Missouri in South Dakota, especially the permanent villages, have

been inundated or otherwise destroyed by dam and reservoir construction. In addition, many remaining sites are undergoing further destruction as a result of shoreline erosion and continued development in the region. The Lake Sharpe project area contains the largest remaining concentration of intact village sites in South Dakota (Steinacher and Toom 1985). As surviving examples of a greatly depleted archeological resource base, these remaining villages represent sites of major significance to continued research into the Plains Village tradition.

Plains Village period components have been positively identified at five of the eight sites reported here. The Antelope Dreamer site (39LM146) is an Initial Middle Missouri earthlodge village of probable Grand Detour phase affiliation (cf. Caldwell and Jensen 1969). Extended Coalescent components are present at the West Bend (39HU83) and Buzzing Yucca (39LM166) sites. The Extended Coalescent occupation at West Bend is interpreted as a short-term campsite or activity area. That at Buzzing Yucca represents a small but widely dispersed earthlodge village settlement with associated occupation debris that is scattered over a broad area. The Ghost Lodge site (39ST120) contains an unusual semipermanent earthlodge village component attributed to the Post-Contact Coalescent variant. The Sitting Buzzard site (39ST122) also contains a Post-Contact Coalescent component, but it lacks associated structural remains and is interpreted as a short-term campsite or activity area. Both Post-Contact Coalescent components are of probable Bad River phase affiliation (cf. Lehmer and Jones 1968). A sixth site, Betty Bite Off (39LM156), exhibits early and late ceramic components of likely Plains Village affiliation. The Betty Bite Off components could not be positively assigned to a specific variant due to their ephemeral nature and a paucity of diagnostic artifacts. Nevertheless, the early ceramic component is likely Initial Middle Missouri, while the late ceramic component is probably Extended Coalescent.

Previous Investigations

The Lake Sharpe project area has had a long history of archeological research, primarily focused on Plains Village period earthlodge villages. The first systematic investigation conducted in the area was carried out by W. H. Over, director of the University of South Dakota Museum (Sigstad and Sigstad 1973). Over identified the locations of a number of sites and collected samples from some of these. Additional work by Alfred W. Bowers (1948) of the Logan Museum, Beloit College, involved a reconnaissance that identified many more site locations. Extensive excavations were first carried out by Elmer E. Meleen (1949) and Wesley R. Hurt (1951a). Additional excavations prior to World War II were conducted by Columbia University at the well known Arzberger site (Spaulding 1956).

The initiation of the Smithsonian Institution, River Basin Surveys (SIRBS) program following World War II rapidly accelerated archeological research in the area, stimulated by plans by the U.S. Army Corps of Engineers to construct a number of mainstem dams and reservoirs along the Missouri. Numerous sites, primarily earthlodge villages and burial mounds, were identified, tested, and/or excavated. Caldwell (1984) summarizes and evaluates SIRBS research in the project area, which focused on salvaging materials and information from a number of Plains Village period sites,

especially the large and highly visible earthlodge villages. Several Plains Woodland period burial mounds were also excavated in the project area. Additional information on the SIRBS program and more recent archeological research in the project area can be found in Ahler and Toom (1989), Falk (1984), Lehmer (1971), Steinacher (1981), Steinacher and Toom (1984a, 1985), and Toom and Picha (1984).

During the past ten years or so, an extensive resurvey and reevaluation of the archeological resources of the project area has been initiated by the U.S. Army Corps of Engineers, Omaha District. Full coverage of all federal lands administered by the Corps within the Lake Sharpe (Big Bend) project area has been accomplished by archeological survey teams from the University of Nebraska-Lincoln (UNL) and University of North Dakota, Grand Forks (UND). A complete inventory of all extant archeological sites within the project area now exists, within the limits of surface survey techniques, and is contained within three basic reports and related documentation (Steinacher 1981; Steinacher and Toom 1984a; Toom and Picha 1984). Some of this work has also included testing of selected sites (Falk 1984; Steinacher 1981; Toom 1989b, this report) and the preparation of a comprehensive National Register nomination statement (Steinacher and Toom 1985). The USACE has also conducted a few small-scale, in-house investigations in the project area (e.g., Nowak 1983, 1986). The archeological testing reported here is part of the ongoing effort by the Omaha District to meet its obligations under federal cultural resources legislation and regulations. The results of previous archeological research specific to the eight sites under study are discussed in the individual site sections of this report.

National Register Properties

A large number of historic and prehistoric archeological sites in the Lake Sharpe project area have been placed on the National Register of Historic Places in recent years, either as individual properties or as multiple properties within archeological districts. Separate individual nominations include the Langdeau site (39LM209), an Initial Middle Missouri variant earthlodge village reported in Caldwell and Jensen (1969); and the Lower Antelope Creek site (39ST106), a multicomponent site consisting of Post-Contact Coalescent variant and historic Euroamerican components reported in Nowak (1983). Many other sites in the project area, mostly earthlodge villages, were placed on the National Register in 1986 as part of the Big Bend Multiple Resource Area nomination (Steinacher and Toom 1985). The Big Bend Multiple Resource Area includes a number of individual properties as well as four archeological districts that contain many more sites.

Obviously, none of the sites considered in the present report are currently listed on the National Register since the primary goal of this project is to evaluate their National Register eligibility. Six of the eight tested sites are considered to be archeologically significant and eligible for listing on the National Register -- West Bend (39HU83), Antelope Dreamer (39LM146), Windy Mounds (39LM149), Buzzing Yucca (39LM166), Ghost Lodge (39ST120), and Sitting Buzzard (39ST122). These sites will be nominated within the existing framework of the Big Bend Multiple Resource Area.

V. WEST BEND SITE (39HU83/231)

Site Description and Background

The West Bend site complex (39HU83/231) is located on a wedge of land between two intermittent streams in the west unit of the West Bend Recreation Area (Figure 7). As a whole, the site complex covers some 14 ha (35 acres); the main body of the site, 39HU83, includes more than half of this area (about 8 ha or 20 acres). The area of the West Bend site originally designated 39HU231 was recorded and tested by SIRBS personnel in 1956 and 1963, respectively (Jensen n.d.; SIRBS Records). Other portions of the site designated 39HU231 and 39HU83 were recorded and tested by UNL personnel in 1978 (Steinacher and Toom 1984b). The physiographic setting of the site complex consists of a high hill to the west flanked by low-lying stream terraces and floodplains to the north, south, and east. The floodplain areas and lower terrace slopes are wooded and brush covered. Vegetation is quite heavy in undeveloped portions of the recreation area. Where recreation facilities are present, vegetation is lighter, consisting of wooded areas with grassy openings. The terrace surfaces and the hill are predominately covered by stands of grasses; weeds are present in disturbed areas.

The West Bend site complex has been divided into three areas: 39HU231-A, 39HU231-B, and 39HU83 (Figure 7). 39HU231-A apparently consisted of a small terrace remnant on the north bank of the southern stream where subsurface occupational debris was reported eroding from cut banks by SIRBS personnel. This portion of the site could not be relocated by subsequent survey work by UNL. 39HU231-B consists of the top of the high hill that dominates the western part of the site area; it contains a sparse surface scatter of lithic and ceramic artifacts that was recorded by UNL personnel. 39HU83, also recorded by UNL personnel, comprises the main body of the site. It contains surface and subsurface occupational debris found on the first terrace of the northern stream and the merged floodplains of the northern and southern streams just above their former confluence. A small embayment off Lake Sharpe has formed where the two streams met prior to the impoundment of the reservoir (Figure 7).

The West Bend Recreation Area is situated on Federal lands administered by the USACE as part of the Lake Sharpe project area. The recreation area itself has recently come under the management of the South Dakota Department of Game, Fish, and Parks, Division of Parks and Recreation. Virtually all of the 39HU83 site area has been developed by the construction of roads, camping pads, outhouses, and playground equipment for the recreation area. It is estimated that roughly 25 percent of the 39HU83 site area has been substantially disturbed or completely destroyed by the construction of recreation facilities; the remaining 75 percent remains more or less intact, although scattered areas of disturbance are present. The areas of 39HU231-A and 39HU231-B remain essentially undeveloped, but their archeological significance is judged to be negligible.

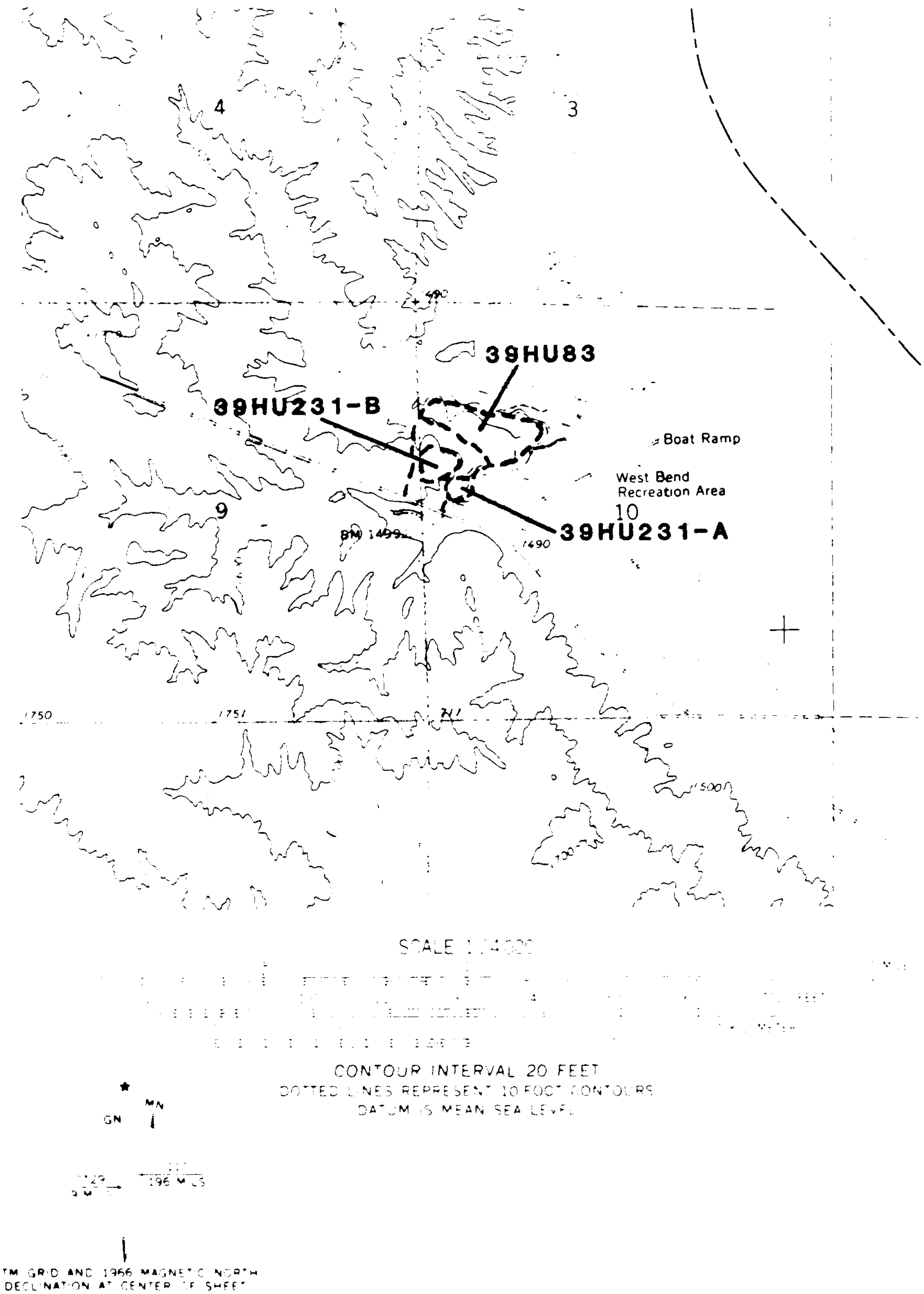


Figure 7. General Map of the West Bend Site Complex (39HU83/231) (from Lower Brule NW Quadrangle, South Dakota, 7.5' Series, USGS 1966).

Previous Archeological Research

Previous archeological investigations at the West Bend site were conducted by the Smithsonian Institution, River Basins Surveys (SIRBS); the Division of Archeological Research, University of Nebraska-Lincoln (UNL); and the U.S. Army Corps of Engineers (USACE), Omaha District. The results of these investigations are discussed in the following paragraphs in chronological order.

SIRBS Investigations. Site 39HU231 was first recorded in 1956 by Alfred Johnson of the SIRBS (SIRBS Records). Johnson described 39HU231 as a small ceramic site located on the bank of a small creek with no visible traces of house depressions, midden areas, or fortifications. This corresponds to the portion of the West Bend site now designated 39HU231-A. Testing was conducted at 39HU231-A in 1963 by SIRBS personnel under the direction of Richard E. Jensen. These excavations consisted of two 3 X 20 ft trenches, presumably excavated to a depth of about 1.5 ft. No features were encountered during testing and observed occupational debris was characterized as sparse. Materials recovered include ceramic body sherds, lithic artifacts, and bone. Jensen concluded that 39HU231-A was a small temporary camp of general Coalescent tradition affiliation, and that much of this occupation had apparently eroded away (Jensen n.d.:75; SIRBS Records).

UNL Investigations. In 1978, UNL personnel under the direction of Terry L. Steinacher surveyed the West Bend Recreation Area and conducted limited testing at 39HU83 (Toom and Steinacher 1984b). This work was conducted under a contractual agreement between UNL and the USACE (Carl R. Falk, principal investigator). Inspection of the area of 39HU231-A failed to reveal any definite evidence of intact archeological deposits at the location reported by the SIRBS. Either the occupation here had completely eroded away, or heavy vegetation precluded its rediscovery. The former circumstance seems the most likely since Jensen notes that 39HU231-A was being actively eroded at the time of the SIRBS testing.

UNL survey teams did locate a sparse lithic and ceramic scatter on the top and upper slopes of a high hill in the west unit of the West Bend Recreation Area. This locality was assigned to site number 39HU231, herein designated 39HU231-B. Additional cultural debris was found by UNL personnel to the northeast of the hill on low-lying terrace and floodplain surfaces. This locality was placed under a new site number: 39HU83. UNL investigations at 39HU231-B consisted of the mapping of the area of the artifact scatter (Figure 8). A controlled surface collection was made at 39HU83, and a single 1 X 1 m test unit (Test Pit 1) was excavated to a depth of 20 cm on the floodplain in the western part of the site (Figure 9). Both historic and prehistoric cultural debris was found scattered about the site surface at 39HU83. The historic debris derives from recent use of the area for recreation, as well as from a farmyard that was once present in the West Bend Recreation Area. The farmyard is referred to as the "Big Bend Farm Station" in SIRBS records, then owned by Howard Hanson of Pierre, South Dakota. Other than scattered surface debris, no other evidence (i.e., structural remains) of the farm occupation was found by UNL personnel.

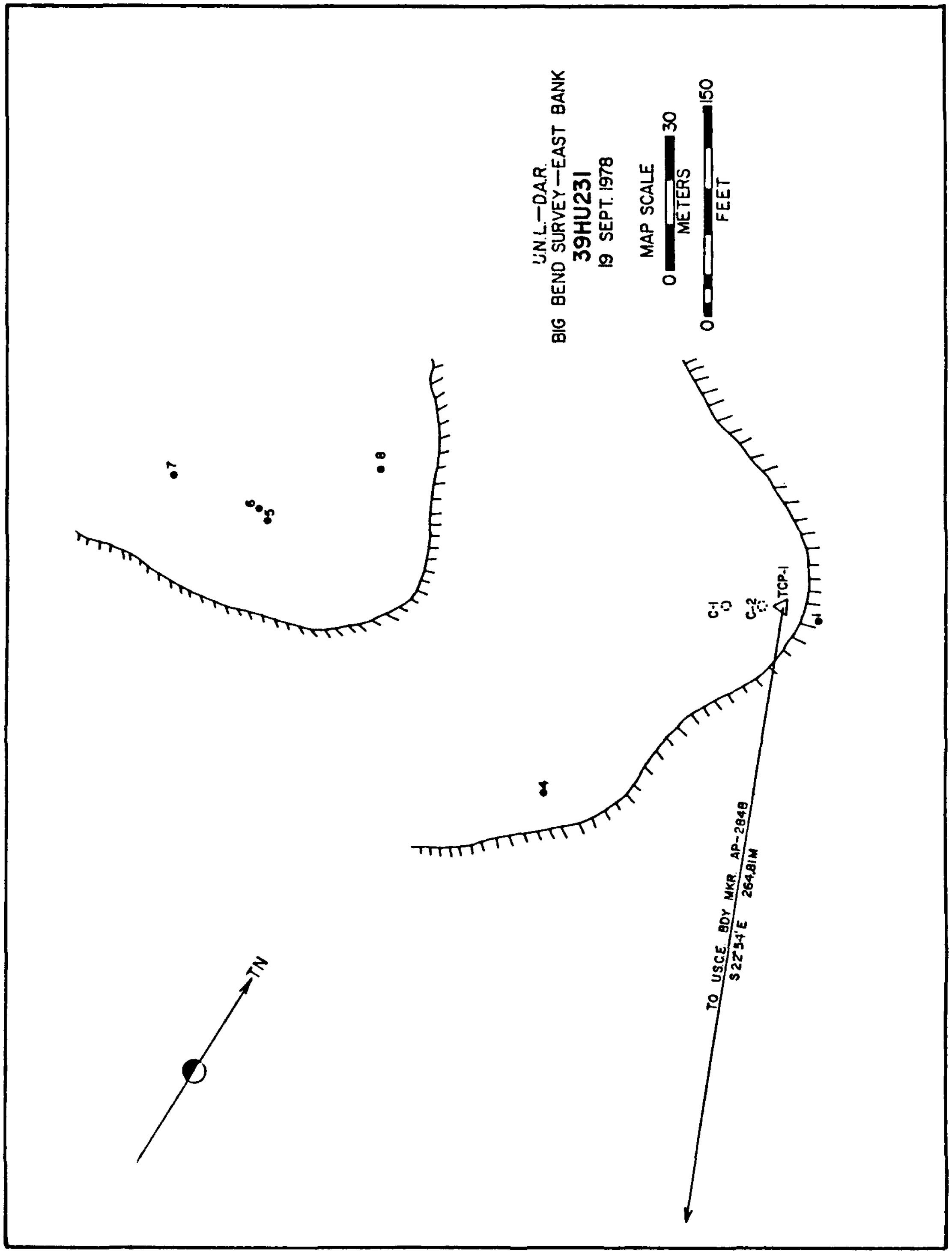


Figure 8. Contour Map of Site 39HU231-B, West Bend Site Complex (39HU83/231).

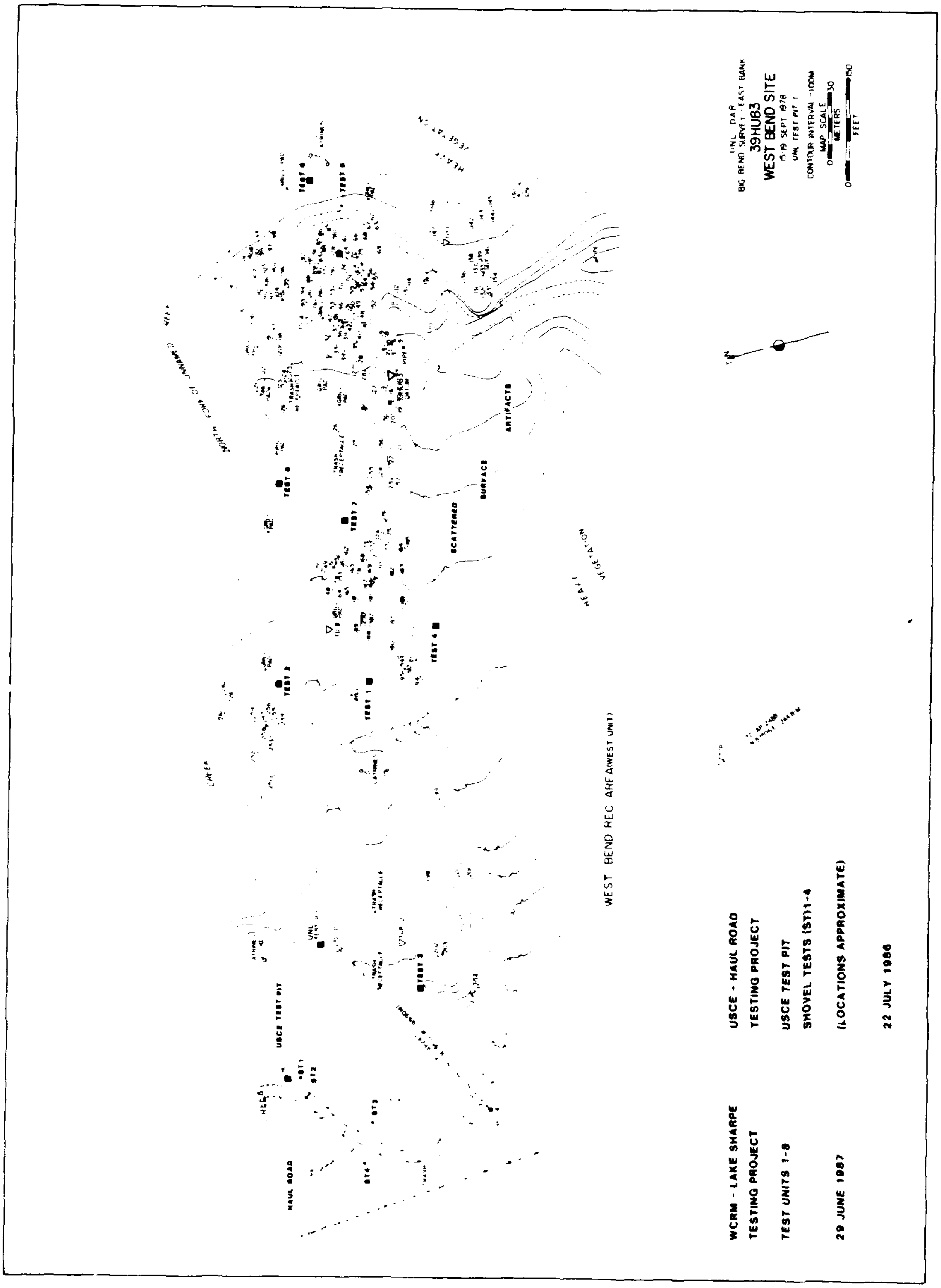


Figure 9. Contour Map of Site 39HU83, West Bend Site Complex (39HU83/231).

The prehistoric cultural debris found by UNL personnel at 39HU83 consisted primarily of ceramic, lithic, and bone artifacts. No surface indications of prehistoric features such as houses, pits, and hearths were found. Rim sherds collected at 39HU83 include one Arzberger Plain, one Talking Crow Straight, and two unidentified Iona or Grey Cloud types (Johnson 1984b). An indeterminate rim was also collected. Body sherd surface treatments include one cord-roughened, two simple-stamped, two smoothed, 10 decorated, and 20 indeterminate specimens. With one exception, the ceramic artifacts collected by UNL indicate a Plains Village (Coalescent tradition) occupation by the Initial Coalescent variant and/or the Extended Coalescent variant. The exception is the single cord-roughened body sherd; it is relatively thick, sand tempered, and heavily cord-marked. This specimen suggests a secondary component of possible Plains Woodland affiliation. Johnson (1984b) concludes on the basis of ceramic evidence that the Plains Village component at 39HU83 is of questionable Initial Coalescent affiliation, conceding that the ceramic sample is too small to make a positive distinction between the Initial and Extended Coalescent variants.

Lithic artifacts recovered from 39HU83 by UNL consist of one side-notched arrow point, one triangular biface, two end scrapers, two patterned biface fragments, an irregular biface, and a number of unpatterned flake tools and cores/core tools. An unpatterned ground stone tool was also collected, as were several pieces of flaking debris. Fire-cracked rock was also commonly observed, but most of these specimens were attributed to recent campers. Bone was relatively abundant at the site. Fragmented, unidentifiable materials are uniformly mammal. Identifiable elements include domestic chicken (1 specimen), large canid (dog, 8 specimens), horse (3 specimens), domestic sheep (1 specimen), and bison (20 specimens). The horse, sheep, and chicken are undoubtedly related to recent use of the site by farmers and campers. The bison and canid specimens appear to be associated with the Plains Village occupation.

The single test excavation (Test Pit 1) dug at 39HU83 by UNL revealed a cultural horizon that extended from about 5-10 cm below the surface of the creek floodplain. Stratigraphically, this horizon is associated with the base of the dark, clayey surface soil that overlies a stiff, gray clay often referred to as "gumbo." The cultural horizon in the test yielded a number of artifactual remains, including ceramics, lithics, identifiable bone elements, and bone fragments. Scattered charcoal flecks were also noted in the soil matrix.

On the basis of these data, UNL investigators concluded that the prehistoric occupation at 39HU83 represents a Plains Village campsite or specialized activity area, possibly associated with a nearby village site. Ceramic artifacts indicate a primary component associated with the Coalescent tradition, possibly affiliated with the Initial Coalescent variant, although an Extended Coalescent variant occupation is equally likely. The merest suggestion of a secondary Plains Woodland component is also indicated.

As a result of the UNL findings, the West Bend site was nominated to the National Register of Historic Places (Steinacher and Toom 1985). Nomination forms dated 16 June 1986 were reviewed by the National Park Service (NPS) and returned to the USACE on 14 August 1986 for additional information. It was the conclusion of the NPS review archeologist that available information on

the site was insufficient for a determination of National Register eligibility. The NPS recommended that further testing be conducted at the site.

USACE Investigations. In July 1986, the USACE conducted an in-house investigation of the creek floodplain area at the extreme western margin of 39HU83 in response to a request by the South Dakota Department of Game, Fish, and Parks to construct a haul road through this part of the site for purposes of making marina improvements in the West Bend Recreation Area (Figure 9). This work was conducted by Timothy R. Nowak, then the USACE South Dakota Field Archeologist. It consisted of (1) a reconnaissance of the floodplain cutbank, (2) the excavation of a 1 X 1 m test pit, and (3) the excavation of four shovel tests. The test pit was dug to a depth of 55 cm near the edge of the floodplain, where the haul road would be cut through the floodplain and cross the stream channel. The shovel tests, which were dug to a depth of 20 cm, were placed along the path of the haul road across the floodplain (Figure 9). No cultural material was found by the cutbank reconnaissance or in the excavations in this portion of 39HU83. On this basis, it was concluded that the proposed haul road was beyond the western boundary of the site, and no adverse impact to the site would result from its construction (Nowak 1986). Construction of the haul road was completed at the time of the present investigations at 39HU83 by WCRM.

Present Investigations

Plans for the continued development of the 39HU83 site area were partially responsible for the decision to conduct additional test excavations at the West Bend site in 1987. The need for more information to complete the nomination of the site to the National Register of Historic Places was another, related consideration. The investigations reported here focus on the further evaluation of 39HU83, the main body of the site complex and the only portion of the site known to contain potentially significant archeological deposits. 39HU83 is also the location where any additional development would most likely take place.

Fieldwork

Eight 1 X 1 m test units were excavated to maximum depth of 30 cm at 39HU83, yielding a total of 2.4 m^3 of excavated volume. Seven test units (Tests 1-3 and 5-8) were placed on the floodplain area, where most recreation development has taken place and would likely take place in the future. The eighth test unit (Test 4) was placed near the edge of the first terrace above the floodplain (Figures 9 and 10). Test unit placement was judgmental, and primarily based on the perceived need to cover as much of the site area as possible, particularly the floodplain area, within the testing limits specified in the USACE Scope of Work (Appendix O). Excavation of all test units proceeded according to 10 cm arbitrary levels. All sediment matrix removed from the tests was dry screened through one-quarter inch mesh hardware cloth. The matrix from the feature encountered in Test 8 (Feature 100) was water screened through one-sixteenth inch mesh window screen.

A

B

Figure 10. Overview Photos of the West Bend Site (39HU83). A: Area of Test 8 in the CT-0 (floodplain), west view (photo no. 3047, WCRM 1987). B: Area of Test 4 in the CT-1 near the outer edge of the terrace, east view (photo no. 3055, WCRM 1987).

Surface collection of analytically significant artifacts was not attempted in view of the extensive surface collection made at 39HU83 by UNL in 1978. An area located on the stream terrace to the southwest of Test 4 had been recently cultivated and planted as a shelter belt. An inspection of this area revealed scattered prehistoric artifactual remains, largely consisting of a few ceramic body sherds, chipped stone flaking debris, fire-cracked rock, and fragmented bone (Figure 9). No attempt was made to collect these artifacts because of their overall generic character. However, their presence in this area does indicate that prehistoric cultural debris extends back from the terrace edge for some distance.

Geomorphic Context and Stratigraphy

The West Bend site (39HU83) occupies the floodplain and first terrace of of two intermittent streams. Following nomenclature developed by Coogan (1984, 1987), the terrace is designated CT-1 (Creek Terrace-1) and the floodplain is designated CT-0 on the basis of local topography. The orientation of the CT-1 indicates it was primarily formed by the action of the northern stream. The northern stream is the larger of the two and it appears to have been the principal landform control for the site area. A narrow portion of the CT-1 extends up the southern stream as well, indicating a secondary contribution to its formation by the southern stream. The orientation of the CT-0 reveals that it is also largely a feature of the northern stream. However, the eastern portion of the CT-0 includes the merged floodplains of both the northern and southern streams as they came together near their former confluence, which now lies beneath a small embayment off Lake Sharpe (Figure 7). The stream channel, which is apparently graded to the level of the prereservoir Missouri floodplain (MT-0), has deeply incised the CT-0 at the site.

The site area ranges in elevation from about 1430 (CT-0) to 1450 (CT-1) ft amsl. Prior to the impoundment of Lake Sharpe, the Missouri River channel, located approximately 1.5 km to the northeast of the site, was at an elevation of about 1370 ft amsl. Lake Sharpe is maintained at an average level of about 1420 ft amsl. The behavior of the river surely had a significant effect on the behavior of the intermittent streams and the formation of the landforms that make up 39HU83. One would expect to be able to correlate the local CT-1 and CT-0 sequence with their counterparts along the Missouri. According to maps prepared by Coogan (1980), the CT-1 is graded to the level of the MT-2 (Missouri Terrace-2), and, in terms of the broader geomorphic context of the fluvial system, would be designated CMT-2 (Creek/Missouri Terrace-2) (Coogan 1987). The CT-0 appears to be graded to the level of the MT-1, and, in broader context, would be designated CMT-1. Much the same sequence is proposed for the nearby Diamond-J site (39HU89) which is located in a similar physiographic setting (Coogan 1984). Nevertheless, the local CT-0 and CT-1 nomenclature developed here for 39HU83 will be maintained because it is more directly relevant to the interpretation of the site.

Profile Descriptions, Sediments, and Soils

The CT-0 and CT-1 exhibit much the same stratigraphic sequence to a depth of 30 cm below the surface. This is unusual for two decidedly different geomorphic contexts. The overall similarity of the surficial stratigraphy for these two different geomorphic settings can be explained in terms of parent material deposition. Even though differences in the mode of sediment transportation and deposition exist between the CT-0 and the CT-1, the sediments deposited at these two locations are thought to derive from the same basic source (i.e., Pierre Shale residuum from the uplands), and these sediments are believed to be deposited at about the same time in response to the same basic geomorphic control (hillslope instability). Thus, it is not surprising to find similar stratigraphic units in the CT-0 and the CT-1, if this explanation is correct. The stratigraphy noted in the CT-0 and the CT-1 is described separately below. Detailed soil descriptions for selected test unit profiles can be found in Appendix C.

CT-0 Stratigraphy. The stratigraphy of the CT-0 was the most extensively explored by the excavation of seven of the eight test units into its surface (Tests 1-3 and 5-8). The depositional environment of the CT-0 is entirely alluvial, consisting of clayey overbank deposits that were apparently laid down by flood events along the intermittent streams. The alluvium is uniformly made up of silty clay loam (SiCL) that is essentially devoid of gravel inclusions. The percentage of clay seemed to be increasing downward in the profiles, although this could not be confirmed on the basis of field observations alone. Following criteria presented in Birkeland (1984), three soil horizons were identified in the alluvial depositional unit: an A1, an A2, and a Bt (Figures 11-14, excepting Test 4 in Figure 12). All three horizons were observed in the seven test units excavated into the CT-0, with the exception of Test 1 which was dug into a disturbed area containing recent fill (Figure 11). A photo of the profile of Test 8, the master profile for the CT-0 area, is presented in Figure 15A.

CT-1 Stratigraphy. Only one test unit (Test 4) was excavated into the CT-1, near edge of the CT-1 scarp (slope). It is difficult to precisely characterize the stratigraphy of the CT-1 on the basis of a single, shallow excavation. The proximity of a camping pad and potential surface disturbances from its construction further compound this problem. Nevertheless, it appears that the upper 30 cm of the CT-1 represents a colluvial (slopewash) depositional environment. The sediment is a silty clay loam (SiCL) that contains a few small, rounded pebbles. The presence of the pebbles in the sediment matrix forms the basis for its interpretation as colluvium. The colluvial unit exhibits three soil horizons: an A1, an A2, and a Bt (Figure 12, Test 4; Figure 15B). The A1 horizon seems to be somewhat siltier than the A2 and could conceivably have had an eolian parent material contribution as well. These soil horizons seem to differ significantly from the A1, A2, and Bt horizons of the CT-0 only in mode of parent material deposition (i.e., colluvial versus alluvial). The colluvium doubtless derives from the high hill located a short distance to the southwest of the CT-1. The CT-1 grades upward laterally to the base of this hill.

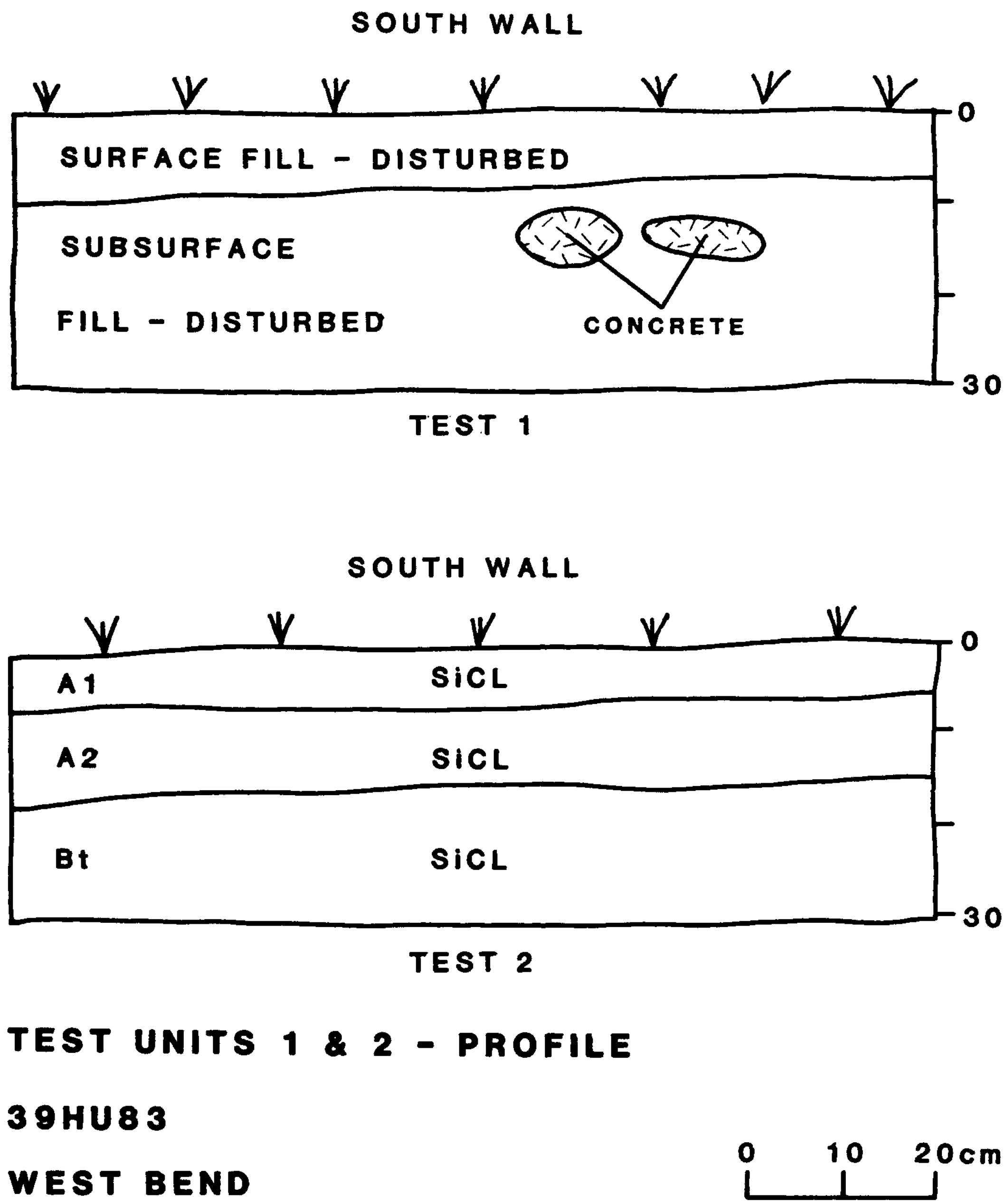


Figure 11. Profile Drawings of Tests 1 and 2, West Bend Site (39HU83).

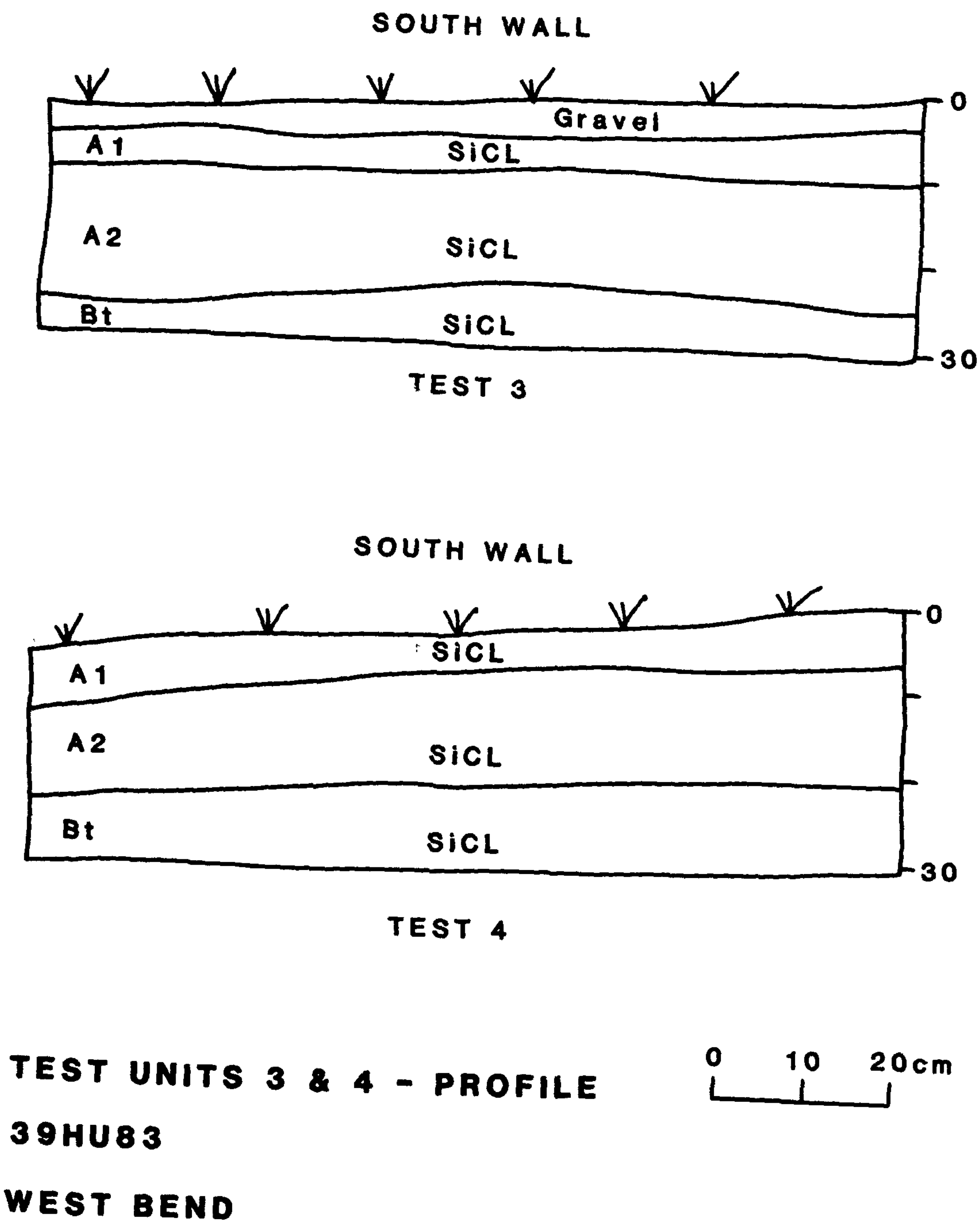


Figure 12. Profile Drawings of Tests 3 and 4, West Bend Site (39HU83).

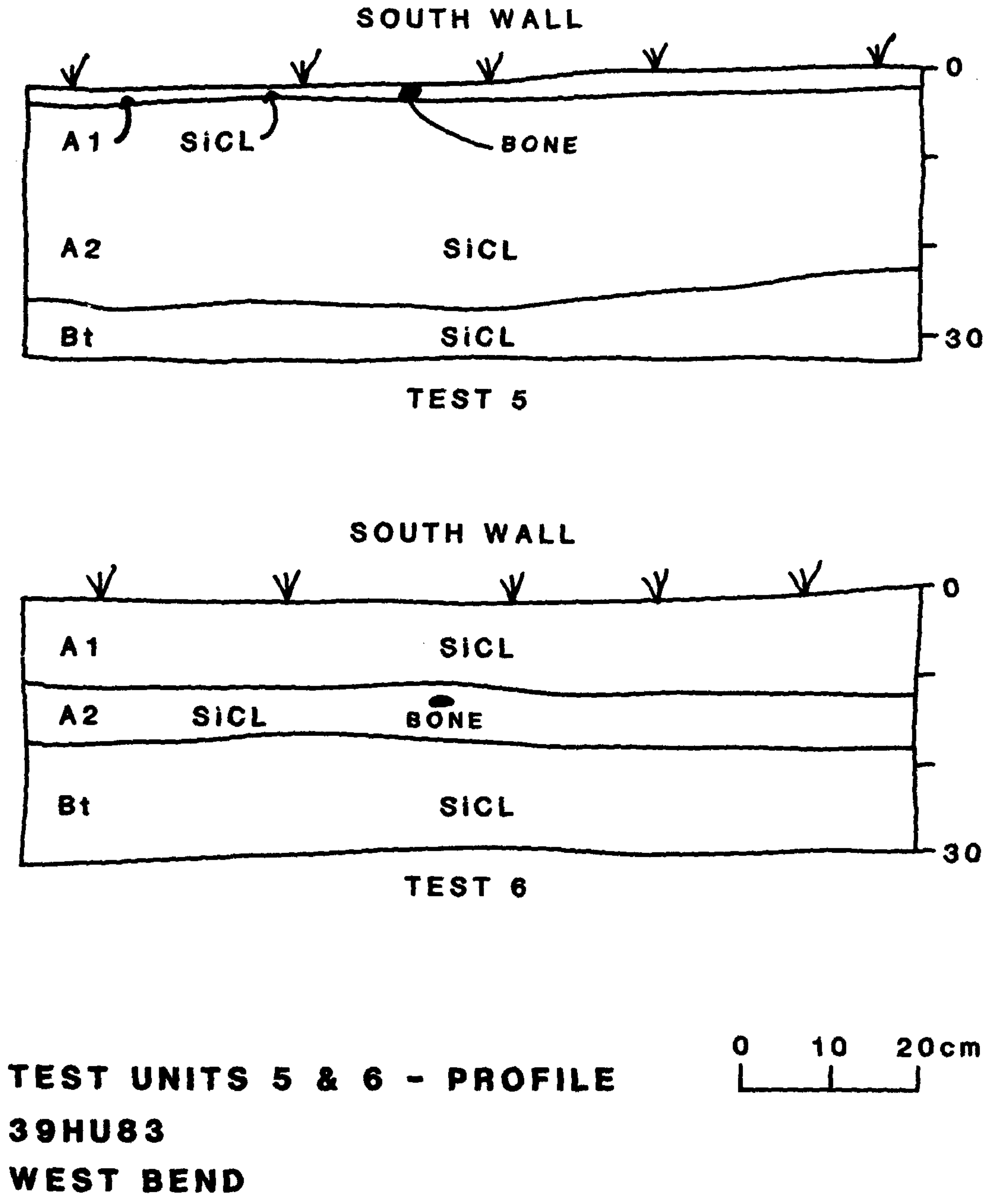


Figure 13. Profile Drawings of Tests 5 and 6, West Bend Site (39HU83).

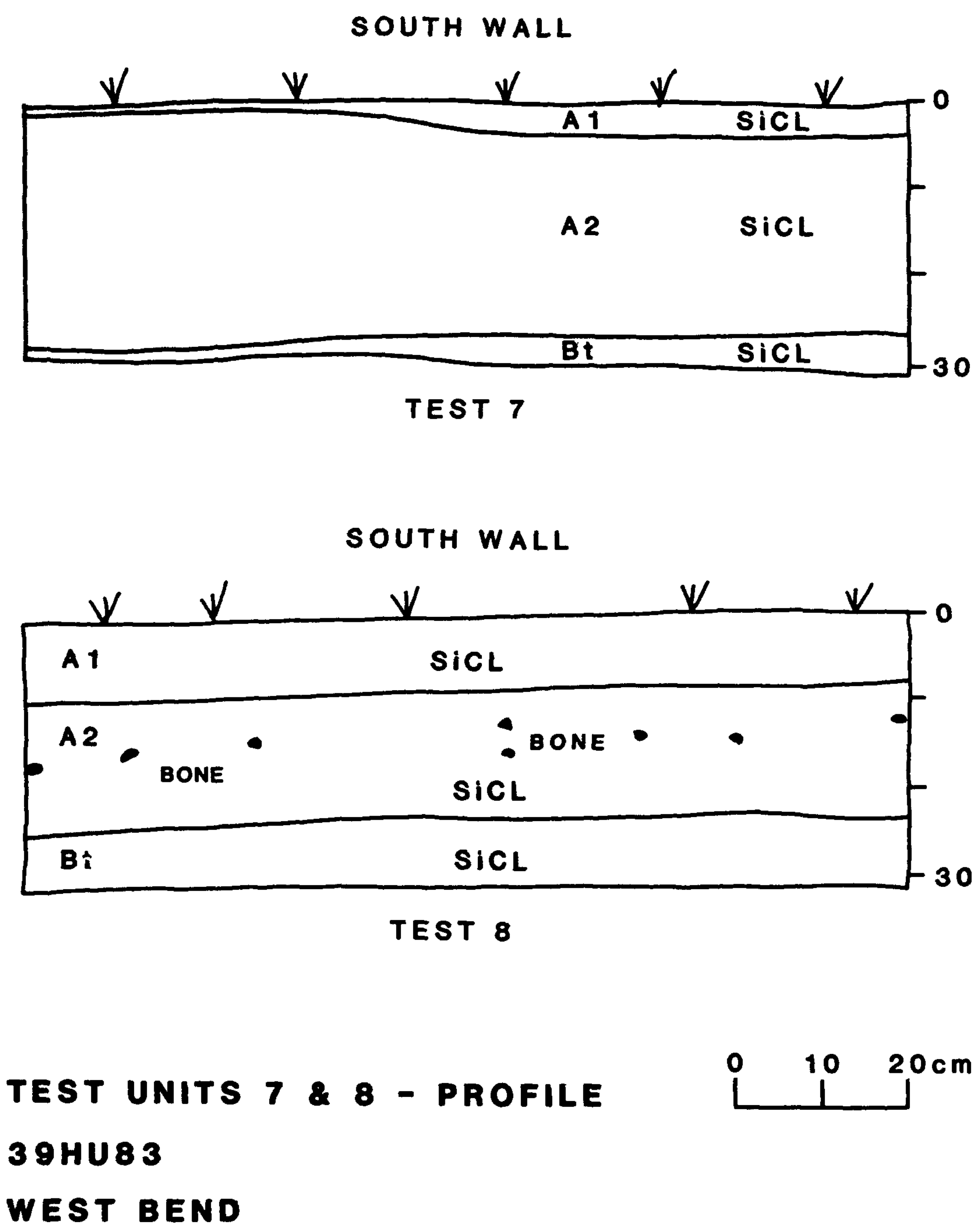
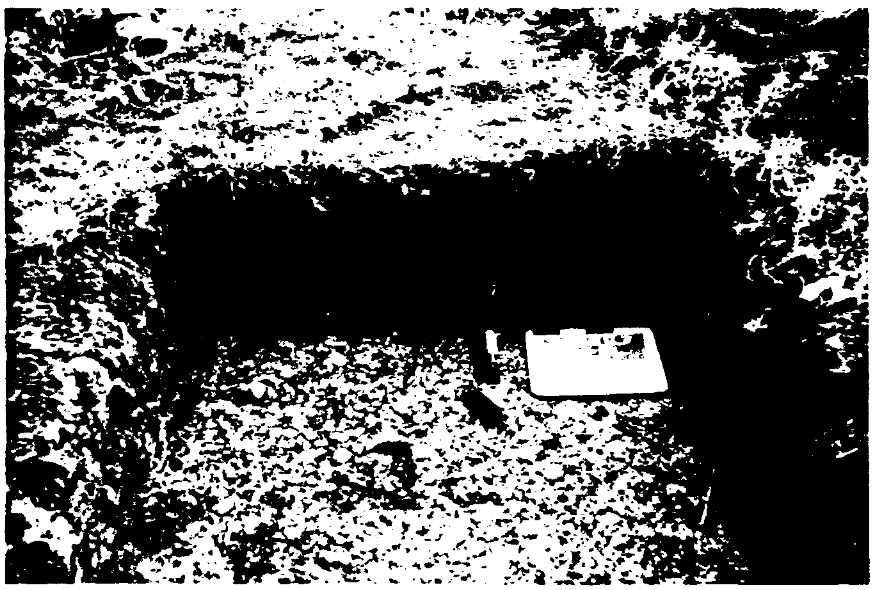


Figure 14. Profile Drawings of Tests 7 and 8, West Bend Site (39HU83).

A



B

Figure 15. Profile Photos of Test 8 and Test 4, West Bend Site (39HU83). A: South wall of Test 8 (photo no. 2925, WCRM 1987). B: South wall of Test 4 (photo no. 2942, WCRM 1987).

Cultural Associations

In the absence of substantial disturbance, the recent (historic) artifactual materials found at the site are clearly associated with the surface and near-surface of the A1 horizons defined in both the CT-0 and the CT-1. Similarly, the A2 horizons of both the CT-0 and the CT-1 were found to contain the most prehistoric cultural debris, and they are identified as the prehistoric cultural-stratigraphic units. Prehistoric remains were often found throughout the entire 30 cm of vertical excavation, however, most likely as a result of displacement by bioturbation and other natural processes.

In the CT-0, prehistoric artifacts were generally found to be concentrated at a surface depth (sd) of 10-20 cm, in association with the middle of the A2 horizon. This is most apparent in the profile of Test 8 where a line of bone fragments was recorded at approximately 15 cm sd (Figures 14 and 15A). Average surface depths to the prehistoric cultural horizon varied from as little as 5 cm to as much as 25 cm depending on the thicknesses of the A1 and A2 horizons, which vary somewhat throughout the CT-0 site area. In the CT-1, prehistoric artifacts were most numerous from approximately 10-20 cm sd in the upper portion of the A2. No definite indications of multiple prehistoric occupation horizons were in evidence. Therefore, prehistoric artifacts at 39HU83 can be analyzed as a single unit for most purposes.

Direct correlation of these findings with the test pit dug by UNL in 1978 into the CT-0 is difficult owing to differences in stratigraphic treatment. The UNL profile description places the prehistoric cultural horizon at the base of a "dark humic soil," overlying a "gray clay soil," from ca. 5-10 cm sd. Assuming that the stratigraphy is somewhat compressed in the area of the UNL test pit, the dark humic soil probably represents the combined A1 and A2 horizons defined here, and the gray clay soil would be the Bt. On this basis, the prehistoric cultural horizon isolated in the UNL test is generally correlatable with the A2 horizon of the CT-0, as defined here. Such an interpretation is consistent with the 1987 test results.

Archeological Components, Radiocarbon Dates, and Analytic Units

On the basis of this research, and previous research at the site by UNL, the West Bend site is known to contain at least two and possibly as many as four archeological components. These are, in chronological order:

1. Recent, Historic (ca. late A.D. 1800s-present);
2. Plains Village, Extended Coalescent (ca. A.D. 1500-1675);
3. Plains Village, Initial Coalescent (ca. A.D. 1300-1500); and
4. Plains Woodland (ca. A.D. 1-1000).

The recent component consists of surface and near-surface historic debris resulting from the present use of the site as a campground, as well as its use in the recent past as a farmyard. The recent component is of no archeological significance. The Initial Coalescent and Plains Woodland components were

tentatively identified by UNL researchers on the basis of a very few ceramic artifacts (Johnson 1984b; Steinacher and Toom 1984b). The present investigations at the site failed to reveal any additional evidence of these components. If Initial Coalescent and Plains Woodland components do in fact exist at the site, they would appear to be of a secondary, ephemeral character. The Extended Coalescent component identified by these investigations, and suggested by UNL researchers, represents the primary prehistoric occupation of the site. This report will focus on the Extended Coalescent component, the only component at the site considered to be of any potential significance.

No samples suitable for reliable radiocarbon dates were recovered from the excavations at the West Bend site. The component dates stated above are based entirely on the estimated time frames of these archeological taxa. Abundant charcoal was found in some test units, usually at or near the surface, but this material is largely attributed to the recent component. Uncontained charcoal found in the deeper prehistoric contexts could represent either cultural debris or debris from natural fire events across the site surface. Considering the very real potential for mixing between the historic and prehistoric components, in addition to questionable cultural association, uncontained charcoal or other datable materials could not be reasonably considered for purposes of radiocarbon dating. A small amount of charcoal is present in the water screen residue of Feature 100. The questionable definition and association of this feature, in addition to the small size of the aggregate charcoal sample, makes this material unsuitable for meaningful radiocarbon dating as well.

For a number of reasons, it is most practical to approach the description and analysis of artifactual remains from the West Bend site in mass for each test unit, without regard to cultural-stratigraphic units. First, defined archeological context units are exclusively general levels, with the exception of the single feature (Feature 100) isolated at the base of Test 8. Second, the prehistoric component seems to represent a single occupation or a sequence of closely spaced, multiple occupations attributable to the same archeological culture. Third, the stratigraphic separation of the historic and prehistoric components is sometimes limited and debris from these two components is often mixed in the upper test unit levels. And fourth, the historic and prehistoric components are sufficiently different from one another to allow their separation on the basis of distinctive artifactual content. In view of these factors, the recent and Extended Coalescent components, the two primary cultural-historic units identified at the site, will comprise the major analytic units for the presentation of artifactual data.

Features

Only two possible prehistoric cultural features were identified in the 39HU83 test excavations. Feature 100 (F100) was isolated at the base of Level 3 in Test 8 at 30 cm sd, although there were indications that it may have actually begun as high as 20 cm. It consisted of an irregular, oval-shaped area of dark-colored fill with charcoal and bone fragments, measuring about 15 cm north-south by 20 cm east-west (Figures 16 and 17). Excavation of F100 revealed a conical-shaped profile that extended 13 cm beneath the base of Test 8 (i.e., 30-43 cm sd). The fill from the feature was removed in mass and

A

B

Figure 16. Photos of Features 100 and 102, West Bend Site (39HU83). A: Features 100 (right) and 102 before excavation, north view (photo no. 2934, WCRM 1987). B: Features 100 (right) and 102 after excavation, north view (photo no. 2935, WCRM 1987).

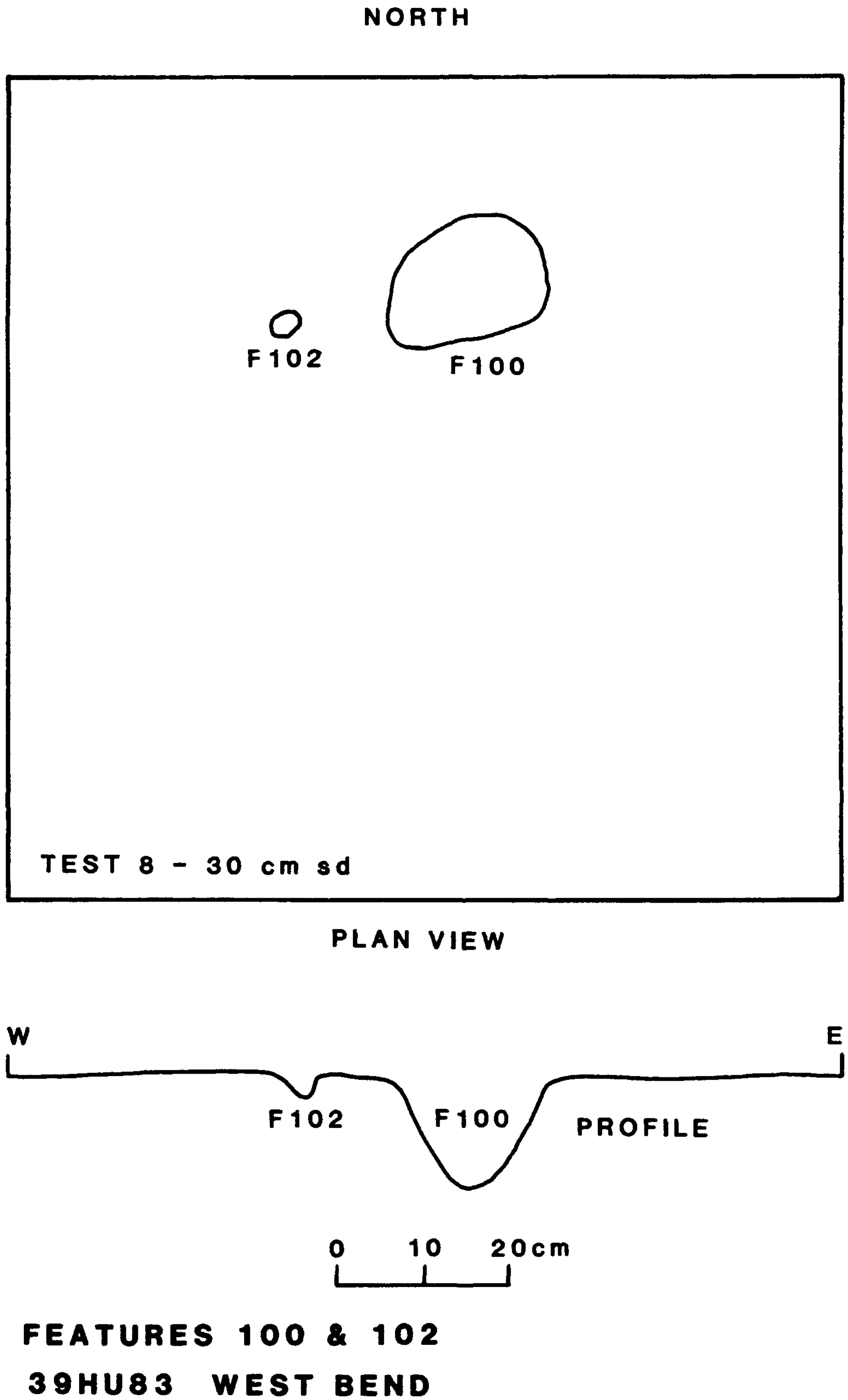


Figure 17. Plan and Profile Drawings of Features 100 and 102, West Bend Site (39HU83).

processed by water screening through one-sixteenth inch mesh window screen. No evidence of burning was found in the feature.

A small, dark-colored circular stain designated Feature 102 (F102) was observed approximately 20 cm to the west of F100 (Figures 16 and 17). F102 had a diameter of approximately 3 cm and was only about 2 cm deep (i.e., 30-32 cm sd). The extremely small amount of fill removed from F102 was not screened but inspected by hand prior to discard; it contained no artifacts. The only other feature designated at the site, Feature 101, was determined to be a rodent hole found at the base of Level 3 (30 cm sd) in Test 3.

Feature 100 produced few artifacts. The only definite artifacts include two G4 sized pieces of chipped stone flaking debris. A small amount of bone debris (6 g) was also recovered, some of which (2 g) was burned. Botanical remains consist of a small amount of wood charcoal (<8 g) and a few burned seeds.

Feature 100 appears to have been a small pit that is attributable to the Extended Coalescent component. Feature 102 may then represent the base of a small post associated with the pit. The specific functions of the pit and post are unknown, but they were likely related to the processing of food products. These interpretations are largely speculative, however, because the association of the features with the Extended Coalescent occupation zone in Test 8 is rather tenuous, and the artifactual content of F100 is too meager to allow precise definition. The somewhat irregular shape of F100 leaves open the possibility that it is a natural feature, perhaps the base of an animal burrow. Similarly, F102 could be the base of rodent hole or tree root.

Native Ceramics

A total of 82 G2-3 native ceramic sherds was recovered from the test excavations at the West Bend site. This number includes 79 body sherds and 3 rims sherds. All are attributed to the Extended Coalescent variant occupation, and they are the primary basis for the identification of this component as Extended Coalescent. Ceramics from the site are highly fragmented. No complete or even partially complete and reconstructable vessels are present in the collection. The sherds are likely from globular-shaped jars, because this is the most popular vessel form among Middle Missouri village groups. The ceramics from the West Bend site are relatively thin and well made. The paste is compact and tempered with crushed granite (grit). Brown colors predominate, with some buff, gray, and grayish black sherds.

Body Sherds

The body sherd sample from the West Bend site consists of 79 specimens, including 22 G2 and 57 G3 sherds; no G1 sherds were recovered. Most of the sherds are from Tests 3 and 4; other tests yielded few or no ceramics (Table 8). Surface treatment data were recorded for G2 body sherds only (Table 9). Plain/smoothed surface treatment is the most common (57.9%), followed by simple-stamped (36.8%) and decorated (5.3%) sherds. The single decorated sherd exhibits a portion of a trailed/incised shoulder design. Surface

Table 8. Native Ceramic Body Sherd Size Grade Data by Test Unit, West Bend Site (39HU83).

Test Unit Number		Size Grade: Grade 1	Size Grade: Grade 2	Size Grade: Grade 3	Total
1	n	-	-	-	-
	%	-	-	-	-
2	n	-	-	-	-
	%	-	-	-	-
3	n	-	7	8	15
	%	-	46.7	53.3	100.0
4	n	-	13	39	52
	%	-	25.0	75.0	100.0
5	n	-	2	5	7
	%	-	28.6	71.4	100.0
6	n	-	-	1	1
	%	-	-	100.0	100.0
7	n	-	-	1	1
	%	-	-	100.0	100.0
8	n	-	-	3	3
	%	-	-	100.0	100.0
Total	n	0	22	57	79
	%	0.0	27.8	72.2	100.0

Table 9. Native Ceramic Body Sherd Surface Treatment Data by Test Unit, Size Grade 2 Only, West Bend Site (39HU83).

Test Unit Number		Plain/ Smoothed	Simple-Stamped	Decorated	Total Class.	Indet.	Total
1	n	-	-	-	-	-	-
	%*	-	-	-	-	-	-
2	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
3	n	6	-	1	7	-	7
	%	85.7	-	14.3	100.0	-	-
4	n	4	7	-	11	2	13
	%	36.4	63.6	-	100.0	-	-
5	n	1	-	-	1	1	2
	%	100.0	-	-	100.0	-	-
6	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
7	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
8	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
Total	n	11	7	1	19	3	22
	%	57.9	36.8	5.3	100.0	-	-

*Percentages are calculated based on the total number of classifiable sherds; indeterminate body sherds are excluded from percentage calculations.

treatment for another three body sherds was recorded as indeterminate. Maximum thickness was also recorded for all G2 body sherds, yielding a mean value of 4.6 ± 0.8 mm. This value is low compared to other mean body sherd thicknesses recorded for earlier (Initial Middle Missouri) and later (Post-Contact Coalescent) Middle Missouri village assemblages.

Both the body sherd surface treatment and mean thickness data are consistent with an Extended Coalescent variant occupation (cf. Johnson 1980). Extended Coalescent ceramics are the thinnest and most finely made of all the Plains Village variants in the Middle Missouri subarea. Exclusive use of plain/smoothed and simple-stamped surface treatments is also characteristic of Extended Coalescent pottery. A higher percentage of decorated sherds is usually present in Extended Coalescent assemblages, but the low number here is likely a reflection of the small sample size.

Rim Sherds and Vessels

Only three small rims sherds were recovered from the test excavations at West Bend. All are from Test 5, including 1 G2 and 2 G3 specimens. After matching, the 3 rims were found to represent a total of 2 vessels. The rim sherds from the site are too small for effective illustration. Nevertheless, an attempt at illustration can be found in Figure 18. The reader is referred to appropriate illustrations in the La Roche site report (Hoffman 1968) for better illustrations of the vessel types reported here.

Iona Indented. Vessel 1 is a small rim section from a globular jar. It is classified as Iona ware, Iona Indented type, on the basis of the following attributes:

Ware: Iona Type: Iona Indented Sample size: n=1

Rim form: straight/curved.

Exterior rim decoration: undecorated (plain).

Lip decoration: tool impressed (lip and inner lip margin).

Decoration motif: repetition of tool impressions in rows.

Exterior rim surface treatment: plain/smoothed.

Lip form: thickened, extruded L-shape.

Vessel 1 fits the description of Class 2, Variety 1 rims from the Extended Coalescent component at the La Roche site (39ST9), which are classified as Iona Indented (Hoffman 1968:40-41). Iona ware is most frequently associated with the Extended Coalescent variant, although it is also found in Post-Contact Coalescent assemblages (Johnson 1980; Smith 1975, 1977; Smith and Grange 1958; Smith and Johnson 1968). In the absence of any other evidence of a Post-Contact component at West Bend, the presence of Iona ware is indicative of an Extended Coalescent occupation.

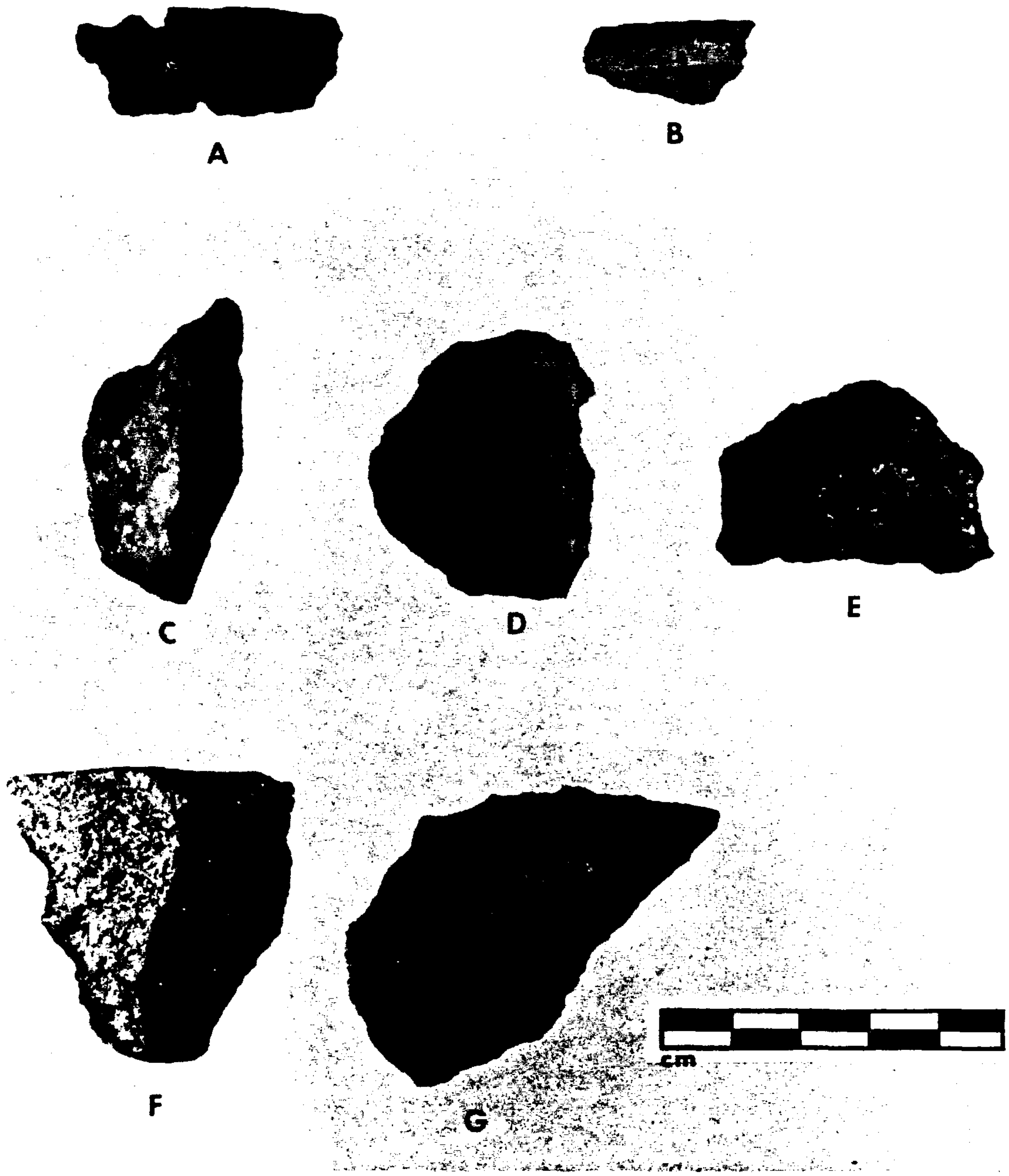


Figure 18. Photos of Selected Artifacts from the West Bend Site (39HU83).
A-B: Native ceramic vessel rim sherds. A: Iona Indented rim (vessel 1). B: La Roche/Iona rim (vessel 2).
C-G: Selected stone tools by functional class. C: Expedient general purpose cutting tool (class 08). D: Transverse scraper used on hard materials (class 17). E: Denticulated flake tool (class 18). F: Combination denticulated flake tool and utilized flake used to saw or slice hard material (classes 18 and 22). G: Combination slotting/grooving tool (beak) and utilized flake used to saw or slice hard material (classes 19 and 22).

Indeterminate La Roche/Iona. Vessel 2 is a small lip fragment, likely from a globular jar. It is tentatively classified as La Roche group/Iona ware pottery of an indeterminate type on the basis of the following attributes:

Ware: La Roche/Iona   Type: Indeterminate   Sample Size: n=1

Rim form: straight/curved?

Exterior rim decoration: indeterminate.

Lip Decoration: tool impressed.

Decoration motif: short diagonal lines (chevron pattern).

Exterior rim surface treatment: indeterminate.

Lip form: thickened, extruded L-shape.

Because the exterior rim decoration cannot be determined, Vessel 2 is indistinguishable from either Class 1, Variety 1 or Class 2, Variety 1 rims from the Extended Coalescent component at the La Roche site (Hoffman 1968:39-41). Such rims are classified as either La Roche group or Iona ware types. La Roche group types are found exclusively in Extended Coalescent components (cf. Hoffman 1967, 1968; Johnson 1980), while Iona ware types are found in both Extended Coalescent and Post-Contact Coalescent contexts, as mentioned above. In this case, the presence of La Roche/Iona pottery is indicative of an Extended Coalescent occupation.

Stone Tools

A total of 11 chipped stone tools was recovered from the test excavations at the West Bend site. No pecked/ground stone tools are present in the assemblage. Descriptive categories represented in the sample include patterned biface fragments (n=1), unpatterned bifaces and nonbipolar cores and core-tools (n=5), acutely pointed flake tools (n=1), and other retouched and modified flakes (n=4). Nine tools are single function implements, while two are double function implements, yielding a total of 13 functional tool occurrences.

Tool Technology

Technological classification of the West Bend stone tools is summarized according to test unit in Table 10. Although the sample size is small, an emphasis on unpatterned tool forms is apparent, including four irregular bifaces (30.8%) and five unpatterned flake tools (38.5%). Other technological forms include one large thin patterned biface, two patterned flake tools, and one nonbipolar core-tool. The tools were rather evenly distributed among Tests 4, 5, 6, and 8, with none coming from the other tests.

Table 10. Stone Tool Technological Class Data by Test Unit, West Bend Site (39HU83).

Technological Class		Test Unit Number 1	2	3	4	5	6	7	8	Total
1 Small Thin Patterned Bifaces	n	-	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-	-
2 Large Thin Patterned Bifaces	n	-	-	-	-	1	-	-	-	1
	%	-	-	-	-	33.3	-	-	-	7.7
3 Irregular Unpatterned Bifaces	n	-	-	-	2	1	-	-	1	4
	%	-	-	-	66.7	33.3	-	-	33.3	30.8
4 Patterned Flake Tools	n	-	-	-	-	-	2	-	-	2
	%	-	-	-	-	-	50.0	-	-	15.4
5 Unpatterned Flake Tools	n	-	-	-	1	-	2	-	2	5
	%	-	-	-	33.3	-	50.0	-	66.7	38.5
6 Thick Bifacial Core-Tools	n	-	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-	-
7 Nonbipolar Cores-Tools	n	-	-	-	-	1	-	-	-	1
	%	-	-	-	-	33.3	-	-	-	7.7
8 Bipolar Core-Tools	n	-	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-	-
9 Unpatterned Pecked/Ground Stone Tools	n	-	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-	-
10 Patterned Pecked/Ground Stone Tools	n	-	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-	-
Total	n	-	-	-	3	3	4	-	3	13
	%	-	-	-	100.0	99.9	100.0	-	100.0	100.1

Technology and Lithic Raw Materials

Lithic raw material type frequency data for those technological classes represented in the West Bend assemblage are presented in Table 11. Eight different raw material types were identified. The sample is too small to establish any kind of definite pattern of lithic resource utilization for the site. The assemblage is about equally split between various local (53.8%) and nonlocal (46.2%) materials. Nonlocal materials include one specimen of smooth gray Tongue River silicified sediment (TRSS) from the northern resource group, one plate chalcedony specimen from the western resource group, and four Bijou Hills silicified sediment specimens from the southern resource group. The use of these lithic resource types is consistent with an Extended Coalescent occupation (cf. Ahler 1977a; Johnson 1984a; Toom 1984a). A weak tendency to use nonlocal lithic resources in the manufacture of patterned tool forms (technological classes 2 and 4) is apparent in the data.

Function and Use-Phase

Data on the functional classification of stone tools from West Bend according to use-phase class are contained in Table 12. Both general functional group and specific functional class data are presented. The tool sample from the site shows a limited range of functions. The majority of the tools are finished specimens that were broken or exhausted during use (use-phase 4). A brief discussion on the general functional groups and specific functional classes represented in the assemblage follows. The Antelope Dreamer site report contains more complete information on stone tool functional groups and classes. Selected examples of the stone tools from the West Bend site are illustrated according to functional class in Figure 18.

Patterned tool forms consist of one bifacial cutting tool, one scraping tool, and one pointed tool. The bifacial cutting tool is an incompletely manufactured specimen of plate chalcedony that was apparently broken during manufacture (use-phase 2). Because of its incomplete manufacture, it is assigned to the generalized cutting tool class (class 15). The scraping tool is a fully functional (use-phase 3) transverse end scraper used on hard materials such as wood or bone (class 17). The pointed tool is a fully functional (use-phase 3) slotting/grooving tool often referred to as a "beak" (class 19). This specimen was also used as simple flake tool (class 22).

Unpatterned, jagged expedient cutting tools, including four general purpose bifacial tools and two denticulated flake tools, are the most common implements in the sample (46.2%). The bifacial tools of this group are inferred to have been used for various cutting or shredding tasks involving a variety of materials (Ahler and Swenson 1985:330). The denticulated flake tools "were probably used most often in sawing, shredding, and scraping tasks involving hard materials such as wood or bone" (Ahler and Swenson 1985:333). All of these specimens are classified as completely manufactured and broken, exhausted, or rejected during use (use-phase 4). Other unpatterned tools include an exhausted (use-phase 4) nonbipolar core (class 21) of solid quartzite and three flake tools. Two of the flake tools are utilized flakes used to saw or slice hard material (class 22). The other flake tools is a retouched or utilized flake used on a variety of materials (class 23).

Table 11. Stone Tool Raw Material Type Data by Technological Class, West Bend Site (39HU83).

Resource Group and Raw Material Type		Technological Class 2	3	4	5	7	Total n	%
Local Resource Group								
02 Coarse Yellow TRSS		-	1	-	1	-	2	15.4
04 Solid Quartzite		-	-	-	-	1	1	7.7
05 Porous Quartzite		-	1	-	-	-	1	7.7
06 Jasper/Chert		-	1	-	1	-	2	15.4
09 Yellow or Light Brown Chalcedony		-	-	-	1	-	1	7.7
Subtotal, Local Resources		-	3	-	3	1	7	53.8
Northern Resource Group								
01 Smooth Gray TRSS		-	1	-	-	-	1	7.7
Western Resource Group								
11 Plate Chalcedony		1	-	-	-	-	1	7.7
Southern Resource Group								
15 Bijou Hills Silicified Sediment		-	-	2	2	-	4	30.8
Subtotal, Nonlocal Resources		1	1	2	2	-	6	46.2
Total	n	1	4	2	5	1	13	100.1
	%	7.7	30.8	15.4	38.5	7.7	100.1	

Table 12. Stone Tool Functional Class Data by Use-Phase Class, West Bend Site (39HU83).

General Functional Group/ Specific Functional Class		Use-Phase Class 1	2	3	4	Total
2. Patterned Bifacial Cutting Tools						
15 Generalized patterned bifacial cutting tool		-	1	-	-	1
3. Patterned or Heavy Duty Scraping Tools						
17 Transverse scraper used on hard materials		-	-	1	-	1
4. Jagged Expedient Cutting Tools						
08 Expedient general purpose cutting tool		-	-	-	4	4
18 Denticulated flake tool		-	-	-	2	2
Subtotal		-	-	-	(6)	(6)
5. Prepared or Regularly Modified Unpatterned Flake Tools						
23 Retouched or utilized flake used on variable material		-	-	-	1	1
6. Unprepared or Irregularly Modified Unpatterned Flake Tools						
22 Utilized flake used to saw or slice hard material		-	-	1	1	2
8. Pointed Tools						
19 Slotting/grooving tool (beak)		-	-	1	-	1
10. Cores and Potential Cores						
21 Core		-	-	-	1	1
Total	n	0	1	3	9	13
	%	0.0	7.7	23.1	69.2	100.0

Chipped Stone Flaking Debris

A total of 76 G2-3 pieces of chipped stone flaking debris was recovered from the test excavations at West Bend. Ten flakes or 13.2% of the sample are G2-sized specimens, and 66 flakes or 86.8% of the sample are G3-sized specimens (Table 13). No G1 flakes were present in the assemblage and no water screen samples were taken at the site which would yield comparable quantities of G4 flakes. Most specimens are from Tests 4, 5, and 7. Two G4 flakes were also present in the water screen material from F100.

It is difficult to precisely interpret the flaking debris size grade data in terms of the chipped stone tool manufacturing operations performed at the site in the absence of appropriate samples of G4 flaking debris. However, the high percentage of G3 flakes in the sample suggests that tool manufacture and maintenance operations predominated. It would appear from the low percentage of G2 flakes and the total absence of G1 flaking debris that core reduction was not a major activity.

Flaking debris raw material type data by size grade are presented in Table 14. The range of materials used in the manufacture of stone tools at the site is similar to that identified in the stone tool analysis, with the addition of a few more local lithic types and one flake of nonlocal Knife River flint (KRF). However, the numbers of flakes of local and nonlocal lithic types indicate a very different trend than did the stone tools. The flaking debris sample is heavily dominated by various local raw material types (90.8%), revealing that locally available materials were used much more often than nonlocal materials in the on-site manufacture of stone tools. This is as expected considering that the majority of the tool sample consists of unpatterned tool forms, and the recognized tendency of Middle Missouri Villagers to manufacture these simple implements from locally available materials (cf. Ahler 1977a; Johnson 1984a). The two G4 flakes from F100 are identified as plate chalcedony.

Fire-Cracked Rock

A total of 423 g of G1-3 fire-cracked rock (FCR) was obtained from the test excavations at West Bend, with the majority coming from Tests 4 and 5 (Table 15). This amount seems low for a Plains Village period site because FCR, most of which represents debris from heated stones used for cooking (stone boiling or roasting) and other purposes, is ordinarily a very numerous artifact class. However, large quantities of fire-cracked rock are most often found in association with hearths and large pits. The fact that features such as these were not encountered in any of the test units likely accounts for the apparent paucity of FCR at the site. Raw material types were not recorded for FCR. Virtually all of this artifact class consists of granites, basalts, and quartzites that are found in abundance in local glaciofluvial gravels. A clear preference in the use of granites as heated stones can be seen in most samples of FCR from sites in the Middle Missouri subarea. The Lake Sharpe samples are no exception to this general observation.

Table 13. Chipped Stone Flaking Debris Size Grade Data by Test Unit, West Bend Site (39HU83).

Test Unit Number		Size Grade Grade 1	Grade 2	Grade 3	Total
1	n	-	-	-	-
	%	-	-	-	-
2	n	-	-	-	-
	%	-	-	-	-
3	n	-	-	-	-
	%	-	-	-	-
4	n	-	2	21	23
	%	-	8.7	91.3	100.0
5	n	-	4	9	13
	%	-	30.8	69.2	100.0
6	n	-	-	2	2
	%	-	-	100.0	100.0
7	n	-	4	30	34
	%	-	11.8	88.2	100.0
8	n	-	-	4	4
	%	-	-	100.0	100.0
Total	n	0	10	66	76
	%	0.0	13.2	86.8	100.0

Table 14. Chipped Stone Flaking Debris Raw Material Type Data by Size Grade, West Bend Site (39HU83).

Raw Material Type		Size Grade			Total	
		Grade 1	Grade 2	Grade 3	n	%
Local Resource Group						
02 Coarse Yellow TRSS		-	2	8	10	13.2
03 Coarse Red TRSS		-	-	2	2	2.6
04 Solid Quartzite		-	-	5	5	6.6
05 Porous Quartzite		-	1	6	7	9.2
06 Jasper/Chert		-	2	9	11	14.5
08/09/10 Various Chalcedonies		-	-	15	15	19.7
13 Basaltic		-	-	2	2	2.6
35 Other Quartzite		-	4	13	17	22.4
Subtotal, Local Resources		-	9	60	69	90.8
Northern Resource Group						
01 Smooth Gray TRSS		-	1	2	3	4.0
28 Knife River Flint		-	-	1	1	1.3
Western Resource Group						
11 Plate Chalcedony		-	-	2	2	2.6
Southern Resource Group						
15 Bijou Hills Silicified Sediment		-	-	1	1	1.3
Subtotal, Nonlocal Resources		-	1	6	7	9.2
Total	n	0	10	66	76	100.0
	%	0.0	13.2	86.8	100.0	

Table 15. Fire-Cracked Rock Size Grade Data by Test Unit, West Bend Site (39HU83).

Test Unit Number		Size Grade (grams) Grade 1	Grade 2	Grade 3	Total
1	wt	-	-	-	-
	%	-	-	-	-
2	wt	-	-	-	-
	%	-	-	-	-
3	wt	-	-	-	-
	%	-	-	-	-
4	wt	121	113	15	249
	%	48.6	45.4	6.0	100.0
5	wt	103	36	10	149
	%	69.1	24.2	6.7	100.0
6	wt	-	14	11	25
	%	-	56.0	44.0	100.0
7	wt	-	-	-	-
	%	-	-	-	-
8	wt	-	-	-	-
	%	-	-	-	-
Total	wt	224	163	36	423
	%	53.0	38.5	8.5	100.0

Other Artifacts

Other artifactual remains recovered from the test excavations at West Bend include quantities of burned earth, charcoal and burned wood, and recent historic debris consisting of glass, metal, and many pieces of concrete (other) (Table 16). Burned earth, amounting to a total of 130 g of G2-3 size pieces, was recovered from Tests 4, 5, 6, and 7. Most of the burned earth is from 0-10 cm sd in Test 6 (105 g), and it is believed to relate to recent use of the site. The much smaller quantities of burned earth from the other tests are likely a product of the Extended Coalescent component.

Charcoal and burned wood was found in all test units, excepting Tests 1 and 5. It is difficult to know how to interpret this material. Most is from upper test unit levels and doubtless relates to the recent (historic) use of the site. Smaller quantities were recovered from Extended Coalescent contexts, but it could represent natural fire events at the site, actual Extended Coalescent occupational debris, or material that has been vertically displaced from the surface. An additional amount of wood charcoal (<8 g) is present in the light fraction water screen residue from F100 in Test 8.

Table 16. Data on Other Artifacts by Test Unit, West Bend Site (39HU83).

Test Unit Number		Burned Earth/ Fired Clay (g)	Charcoal/ Wood (g)		Euroamerican (Recent)		
					Glass	Metal	Other
1	wt	-	-	n	1	-	5950
2	wt	-	30	n	-	4	-
3	wt	-	25	n	1	2	-
4	wt	3	2	n	-	-	-
5	wt	1	-	n	-	-	-
6	wt	105	148	n	91	2	55
7	wt	21	23	n	-	2	-
8	wt	-	8	n	-	3	-
Total	wt	130	236	n	93	13	6005

Euroamerican or recent debris found at the site comes from 0-10 cm sd in Tests 2-3 and 6-8; none was found in Tests 4 and 5. Test 1 was placed near a camping pad and proved to contain recent fill littered with pieces of concrete throughout its entire 30 cm depth. This material unquestionably derives from the former farmyard occupation and the continued use of the site area for recreation. Virtually all of the glass consists of fragments of brown bottle glass. One small, cylindrical specimen of brown glass or plastic (catalog no. 301) was split longitudinally revealing a small conical concavity; its function is unknown, although it does not appear to have been a bead. Metal specimens include 10 can pull tabs and pull tab fragments, 2 pieces of wire, and what appears to be the barrel section from a toy pistol. All of the "other" recent material consists of pieces of concrete, with most coming from Test 1. The concrete is probably waste material dumped at the site after the installation of barbecue stands in the campground.

Vertebrate Fauna

Vertebrate fauna remains recovered from the test excavations at the West Bend site total 1910 g of G1-3 unmodified bone debris. Of this amount, 137 g of G2-3 bone showed signs of burning (Table 17). The bone from the site is highly fragmented and only a few more or less complete, identifiable elements are represented in the collection. No specimens of modified bone (bone tools) were recognized. All test units at the site yielded some bone debris; Tests 4, 5, 7, and 8 produced the most. Identifiable bone from the West Bend site is considered in detail in Appendix B (Wheeler, this report). Only the general characteristics of the bone sample are considered here.

Identifiable bone linked more or less exclusively to the Extended Coalescent component includes elements from bison, deer, deer/pronghorn, and cottontail rabbit. The sample is too small to offer much in the way of definitive interpretation, except to note that large mammals, especially bison, were the preferred quarry. The identified faunal remains also indicate that the site functioned principally (or at least in part) as an animal processing location, with hunting most likely occurring in the immediate site vicinity.

Macrobotanical Remains

Nine charred seeds or seed fragments were found in the water screen matrix of F100 in Test 8. Six specimens are identifiable, and these are considered in detail in Appendix A (Van Ness, this report). Species represented include buckwheat or dock, beebalm, and wild grape. Various parts of these plants had many economic uses among prehistoric peoples. Buckwheat or dock was used for food, medicine, and other domestic purposes. Beebalm was used for medicinal purposes and parts of the plant are edible. The consumption of grapes is documented among many historic Indian groups of the region (Van Ness, this report).

Table 17. Unmodified Bone Size Grade Data by Test Unit, West Bend Site (39HU83).

Test Unit Number		All Bone (grams)				Burned Bone (grams)			
		G1	G2	G3	Total	G1	G2	G3	Total
1	wt	-	-	21	21	-	-	-	-
	*%	-	-	100.0	100.0	-	-	-	-
2	wt	-	21	31	52	-	-	1	1
	%	-	40.4	59.6	100.0	-	-	3.2	1.9
3	wt	13	1	4	18	-	-	-	-
	%	72.2	5.6	22.2	100.0	-	-	-	-
4	wt	11	77	119	207	-	6	15	21
	%	5.3	37.2	57.5	100.0	-	7.8	12.6	10.2
5	wt	69	150	116	335	-	-	9	9
	%	20.6	44.8	34.6	100.0	-	-	7.8	2.7
6	wt	-	40	36	76	-	-	3	3
	%	-	52.6	47.4	100.0	-	-	8.3	4.0
7	wt	58	252	220	530	-	9	27	36
	%	10.9	47.6	41.5	100.0	-	3.6	12.3	6.8
8	wt	8	213	450	671	-	33	34	67
	%	1.2	31.7	67.1	100.0	-	15.5	7.6	10.0
Total	wt	159	754	997	1910	-	48	89	137
	%	8.3	39.5	52.2	100.0	-	6.4	8.9	7.2

*Burned bone percentages are stated as a product of the quantities of all bone in a test unit.

Artifact Distributions and Densities

Distribution and density data on the major classes of prehistoric artifacts from the West Bend site are presented in Table 18. Selected data from Test Pit 1 excavated by UNL in 1978 are also presented. Fire-cracked rock and unmodified bone data for the UNL test could not be included except to note the presence of these remains because UNL inventory data for FCR and bone were compiled as counts rather than as weights as in this report. It can be noted, however, that FCR and bone were found in relative abundance in the UNL test. The 1986 USACE tests in the extreme western area of the site did not yield any artifacts. Because each test unit is a 1 X 1 m excavation, the values in the table for individual tests represent quantities of artifacts per square meter. Artifact quantities (n/wt) per m^2 are also stated for the site as a whole based on data from the eight WCRM test units.

Table 18. Major Prehistoric Artifact Class Distribution and Density Data by Test Unit, West Bend Site (39HU83).

Test Unit	Rim Sherds	Body Sherds	Stone Tools	Flaking Debris	FCR (g)	Unmodified Bone (g)
1	-	-	-	-	-	21
2	-	-	-	-	-	52
3	-	15	-	-	-	18
4	-	52	3	23	249	207
5	3	7	3	13	149	335
6	-	1	4	2	25	76
7	-	1	-	34	-	530
8	-	3	3	4	-	671
Total	3	79	13	76	423	1910
n/wt/m^2	0.4	9.9	1.6	9.5	52.9	238.8
UNL - Test 1	-	19	2	13	yes*	yes*

*UNL fire-cracked rock and bone data are inventoried according to count rather than weight.

Quantities of most all major artifact classes were recovered from all tests, with the obvious exception of Tests 1 and 2. As was discussed previously, Test 1 was placed near a camping pad and contained nothing but recent fill to its maximum depth of 30 cm. It is obvious that the prehistoric occupation has been completely removed and destroyed in the immediate area of Test 1. This statement is likely true of other locations containing camping pads and other recreation facilities constructed at the site. The other test units, with the exception of Test 2, indicate that more or less intact prehistoric cultural deposits are present in areas not affected by the construction of recreation facilities.

Tests 4 and 5 show the greatest overall diversity and numbers of artifactual remains at the site. However, Test 3 yielded the second highest number of body sherds, Test 6 yielded the most stone tools (functional occurrences), Test 7 produced the most flaking debris, and Tests 7 and 8 produced the most bone. The UNL test pit also seems to have been placed in a relatively productive area. These results suggest a clustered distribution for artifactual materials at the West Bend site, which further suggests that the site is made up of a series of more or less discrete activity areas scattered about the site locale. The data for the CT-0 (floodplain) portion of the site are more complete, and this conclusion is most relevant for this area, but the single test into the CT-1 (Test 4) does indicate that portions of the first terrace above the floodplain also contain relatively substantial amounts of cultural debris. This conclusion is further supported by surface artifacts observed in disturbed areas of the CT-1.

Discussion and Conclusions

The archeological data reported here for the West Bend site are limited due to the dispersal of a small number of test units throughout a rather large site area. However, these data, combined with that previously collected by UNL, are sufficient to interpret the site in terms of cultural-historical affiliation and function. The Plains Village, Extended Coalescent component represents the only substantial and potentially significant archeological entity at the site. The Extended Coalescent occupation minimally functioned as a specialized activity area or location where animal and probably plant resources were processed for purposes of obtaining subsistence and technological materials. This interpretation is supported by the plant and animal remains found at the site as well as by the stone tool functional analysis and the presence of pottery vessels. Bison appear to have been the primary animal resource processed at the site. These animals were probably killed nearby, perhaps on the uplands or on the lower slopes and stream courses leading down to the site from the west. Selected portions of these animals were then transported to the site for final processing. Plant resources processed at the site were probably collected in the Missouri bottoms or along tributary streams in the immediate site vicinity.

At a maximum, the site could also represent a field camp for Extended Coalescent hunter-gatherer task groups. A temporary campsite would ordinarily contain evidence of features such as hearths, pits, and other simple domestic facilities. With the exception of one small pit and post (F100 and F102) of dubious cultural origin, no direct evidence of domestic facilities was found

at the site. However, this is likely a bias introduced by the limited extent of the test excavations. For example, indirect evidence of hearths can be seen in the presence of such artifactual remains as fire-cracked rock, burned earth, and charcoal. In view of this, hearths and other related features are probably present at the site, and more extensive excavations would likely confirm their existence, as well as the existence of an Extended Coalescent field camp used in conjunction with the specialized activity locations.

The available data also seem to indicate that a number of small-sized Extended Coalescent task groups made brief use of the site on an intermittent basis. These sporadic occupations of the site probably occurred over an extended period time. The apparent clustered artifact distributions at the site point to the existence of many discreet activity loci, with each loci exhibiting a somewhat varied artifact composition and, by inference, a somewhat different activity structure. This is not the type of spatial patterning that one would expect from a mass occupation of the site that occurred over a relatively brief span of time and that was focused on a single, primary activity.

Little of the site area was actually tested, and in view of the remarks in the preceding paragraph, it is thought that the research potential of the site is greater than it might appear at face value. If isolated, discrete activity loci exist within the site, and this seems to be an excellent possibility, then the West Bend site offers the opportunity to study discrete, archeologically isolatable episodes of hunting and/or gathering by small Plains Village tasks groups. Such an opportunity is uncommon in the known and extant Plains Village archeological record of the Middle Missouri subarea. In this sense, then, the West Bend site can be viewed as a virtually unique archeological resource.

VI. ANTELOPE DREAMER SITE (39LM146)

Site Description and Background

The Antelope Dreamer site (39LM146) is a recently discovered earthlodge village located in the USACE Narrows Area on the Big Bend peninsula (Figure 1). The site is situated at an elevation of about 1580 ft amsl atop a more or less flat-topped hill or ridge in the midst of rugged, heavily dissected and eroded Missouri Breaks terrain (Figure 19). The site area covers about 3.75 ha (9.25 acres). The view from the site is spectacular and includes a full vista. High Missouri River bluffs form the western site margin, rising some 200 ft above the former level of the Missouri River (prereservoir level). The rest of the site is bounded by steep, rugged slopes and ravines. The surrounding lower terrain to the north, east, and south is also rugged and eroded, but open to scrutiny from the higher ground of the site for a considerable distance. The surface of the site is well vegetated with mixed grass. A dirt track road runs up to and through the site area, terminating in the vicinity of a cast-iron "lamppost" located in the western part of the site near the bluff edge. Until just recently, the presence of the so-called lamppost has remained an enigma. In June 1988, a local informant, Mr. Konnie Olson of the USACE, identified this feature as a support for a telephone line that once crossed the river at this point prior to the impoundment of Lake Sharpe. After much erroneous speculation about the function of this cast-iron telephone pole, the mystery has been finally solved and we can all rest easier. Except for some minor erosion along the steep southern and western site margins, and negligible disturbance caused by the road, the site is in pristine condition and remains virtually untouched by modern development. It is presently in no danger from shoreline erosion.

Previous Archeological Research

The Antelope Dreamer site was first discovered and recorded in 1983 by an archeological survey crew from the University of North Dakota (UND) under the supervision of Terry L. Steinacher (Toom and Picha 1984). This work was performed by UND as part of a contractual agreement with the U.S. Army Corps of Engineers (USACE), Omaha District, to conduct an archeological survey of selected federal lands on the west bank of the Lake Sharpe project area (Dennis L. Toom, principal investigator; Stanley A. Ahler, co-principal investigator). The UND crew recorded 12 well buried and rather indistinct house depressions at the site, and two smaller depressions which might be extramural cache pits (Figure 20). Hand coring was used to confirm the presence of earthlodge remains. Most of the house depressions are square to rectangular in shape and were dug into the flatter ridge slopes. What appears to be a single round house depression (Feature 1) is situated on a low, flat-topped knoll. No surface indications of village fortifications were observed.

Work at the site by UND included mapping and the collection of selected surface artifacts (primarily ceramics). One house depression (Feature 11) was systematically hand cored in an attempt to determine its size and configuration. The Feature 11 depression is dug into the north face of a moderately sloping ridge (Figure 21A); it measures approximately 7.80 m north-south by 10.35 m east-west. Coring of the depression revealed a rectangular

A

B

Figure 19. General Photos of the Antelope Dreamer Site (39LM146). A: Aerial photo of the site (center), southwest view (photo no. 2648, UND 1983). B: Photo of the site area (arrow) from the Windy Mounds site (39LM149), south-southwest view (photo no. 3097, WCRM 1987).

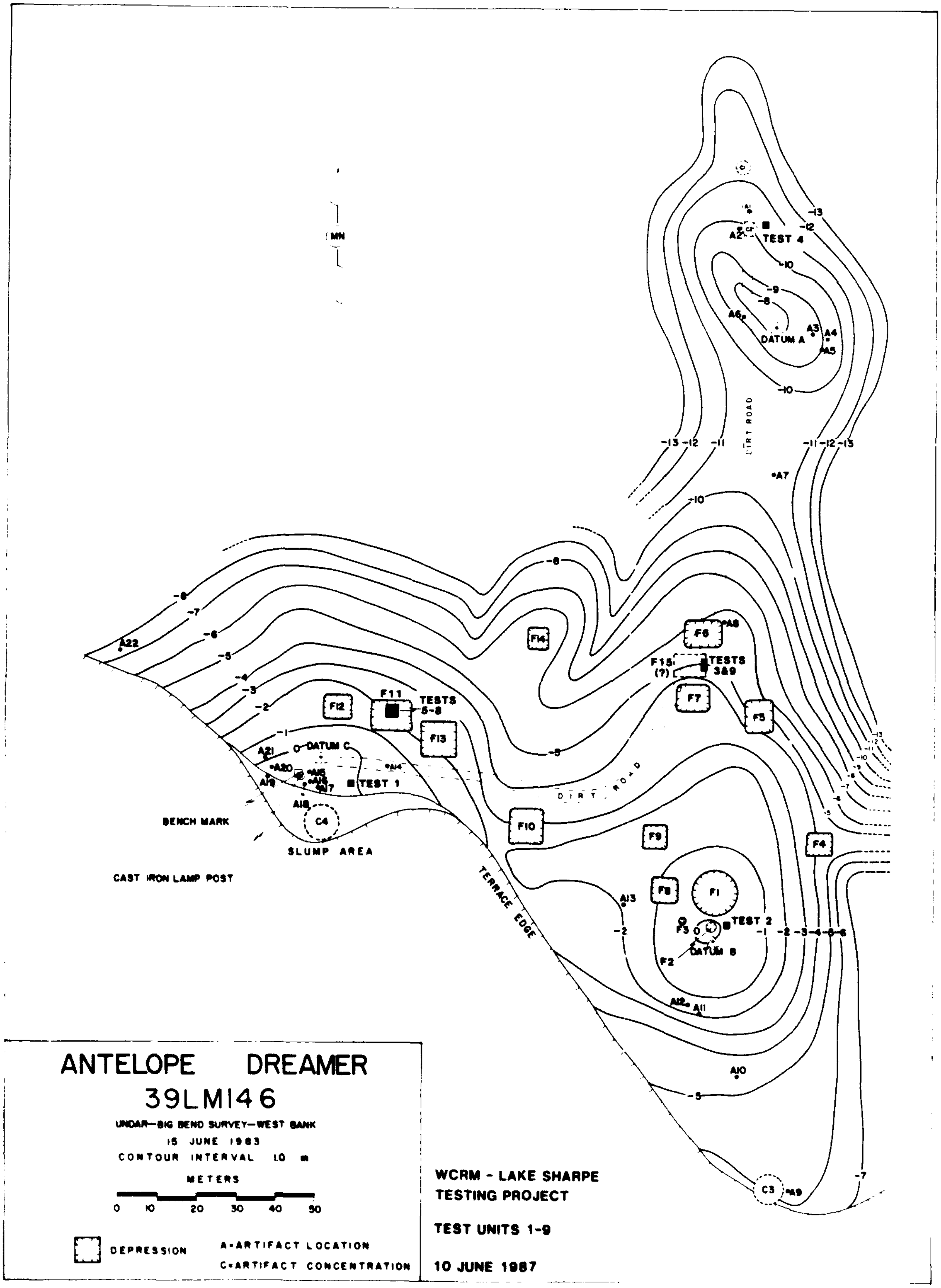
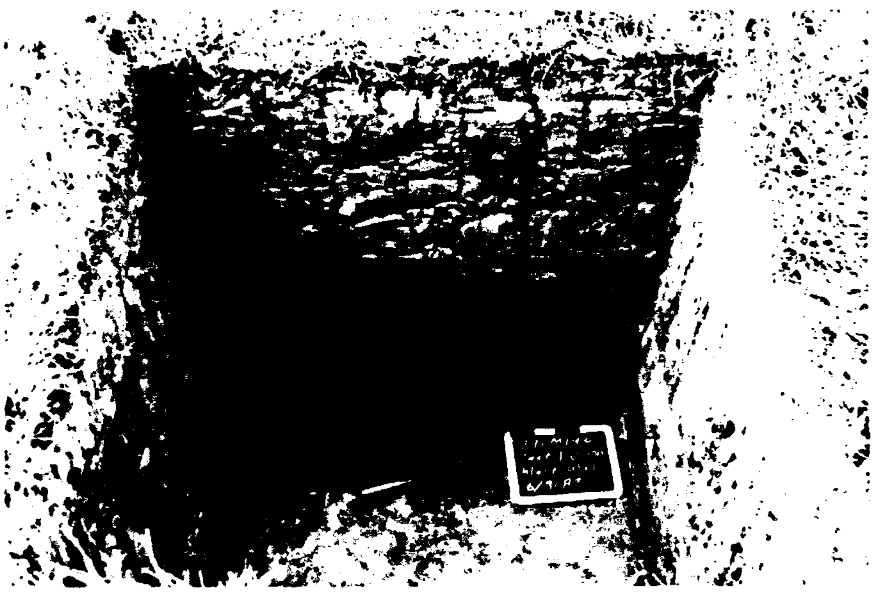


Figure 20. Contour Map of the Antelope Dreamer Site (39LM146).

A



B

Figure 21. Photos of Feature 11 and Test 1, Antelope Dreamer Site (39LM146). A: Crew person standing in the House 11 (Feature 11) depression, west-northwest view (photo no. 2502, UND 1983). B: Profile photo of the west wall of Test 1 (photo no. 2871, WCRM 1987).

house floor in a subsurface pit measuring ca. 9.50 m north-south by 7.25 m east-west. The house pit was dug about 60 cm beneath the former occupation surface with the floor of the house found at about 100 cm below the existing ground surface along its east-west axis. From north-south, the house pit varies from about 30-110 cm below the existing ground surface as a result of the excavation of a level floor area into a sloping surface (Figure 22). Thus, the northern wall of the house was formed entirely by the earthlodge superstructure, with the excavated house pit terminating at the edge of the slope. Even though the long axis of the depression is oriented from east-west, the long axis of the house floor is oriented from north-south, indicating that some earth was removed outward from the eastern and western margins of the house pit, presumably for use in house construction. This phenomena is also a consequence of digging the house pit into the south-north slope, with earth for construction of the house conveniently available mostly to the east and west.

Other house features reported by UND from the coring of Feature 11 include a sloping entryway apparently built along the former occupation surface (the ridge slope), a 1 m wide platform or step at the end of the entrance, and a possible intramural cache pit located at the back of the house adjacent to the northern house wall (Figure 22). It was also quite obvious from coring that the house had burned, because an abundance of charcoal, ash, and burned earth was encountered at the floor level and along the entryway. As nearly as could be determined by probing alone, the front of the house faced south-southwest.

Assuming that the Feature 11 house is typical of the others at the site, UND researchers concluded that the remains of rectangular earthlodges are present at the Antelope Dreamer site, indicating a Middle Missouri tradition occupation by either an Initial or Extended Middle Missouri variant group (Toom and Picha 1984). The Terminal Middle Missouri variant also exhibits rectangular houses, but an occupation by a Terminal Middle Missouri group can be safely ruled out because sites of this variant are unknown in the Big Bend region. Furthermore, Terminal Middle Missouri houses lack the distinctive platform or step at the end of the entryway which is characteristic of Initial and Extended Middle Missouri architecture (Lehmer 1971). The possible circular house depression found at the site (Feature 1) would be atypical of Middle Missouri tradition architecture, and it may indicate a later Coalescent tradition component, if it is indeed the remains of a circular house.

Rim sherds collected from the surface of Antelope Dreamer by UND include Anderson and Foreman types, which are typical of the Initial Middle Missouri variant (cf. Johnson 1980). Surface collected body sherds exhibit cord roughened and smoothed surface treatments, which also points to an Initial Middle Missouri occupation. On the basis of these limited architectural and ceramic data, UND investigators tentatively concluded that the Antelope Dreamer village contains a single component attributable to the Initial Middle Missouri variant (Toom and Picha 1984). It was also concluded that the Initial Middle Missouri component is likely a representative of the Grand Detour phase because all of the sites of this phase occur in the general vicinity of Antelope Dreamer, in the area of the Big Bend proper (Caldwell and Jensen 1969:2). Langdeau village (39LM209), a Grand Detour phase site, is located a little over a mile to north of Antelope Dreamer. It was recognized, however, that more extensive investigations at the site could reveal additional components. For example, the possible circular house depression

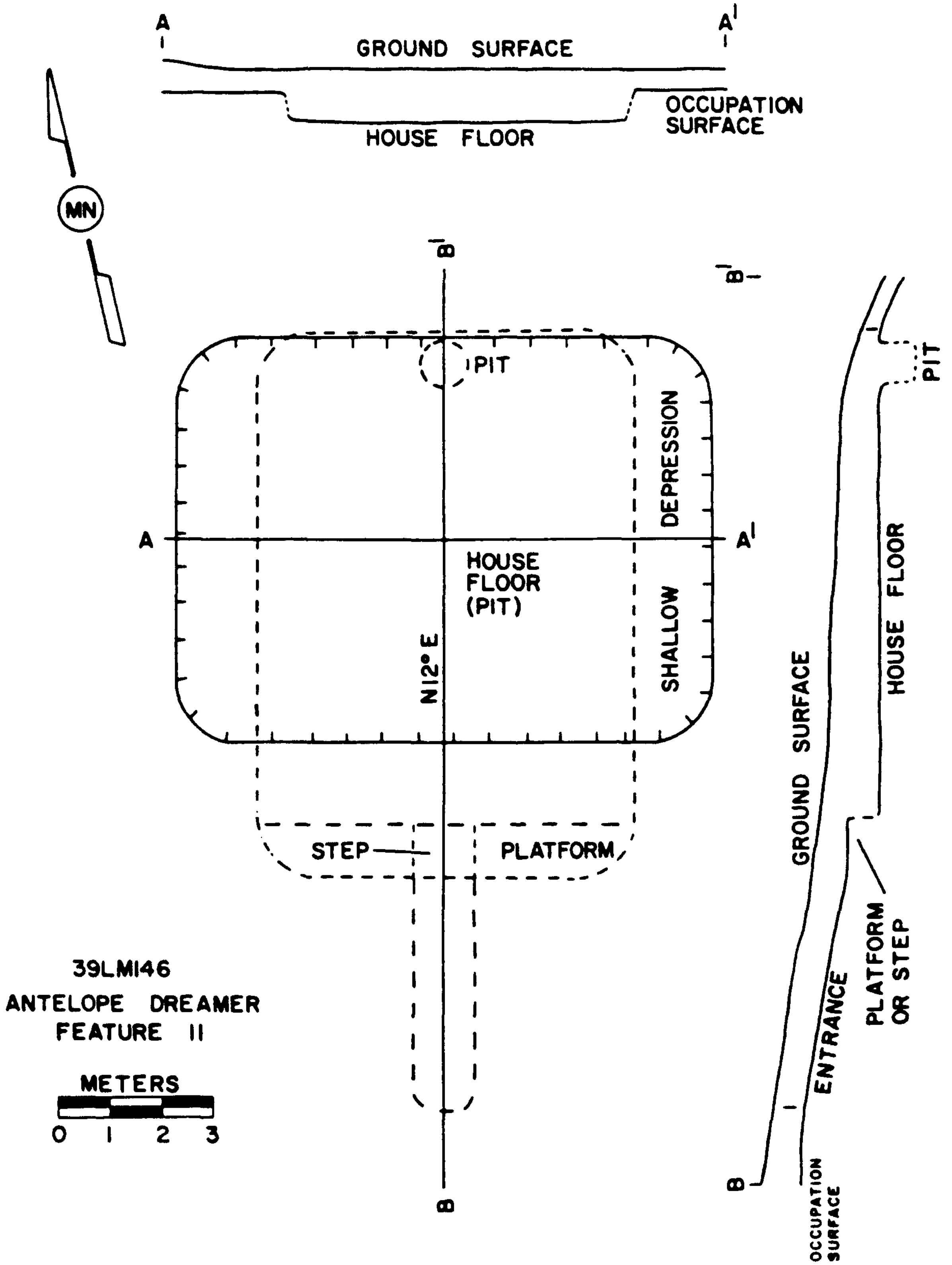


Figure 22. Plan and Profile Drawings of Feature 11 (House 11) as Estimated by Hand Coring in 1983, Antelope Dreamer Site (39LM146) (from Toom and Picha 1984:102).

recorded by UND does suggest the potential for a later Coalescent tradition component. The site was recommended for testing and a full National Register evaluation.

Present Investigations

The present investigations at Antelope Dreamer are concerned with the archeological testing of the site pursuant to its nomination to the National Register of Historic Places. The goals of this research include the recovery of sufficient information from the site to conclusively determine its cultural component(s) and to evaluate its artifactual content for both intramural (within-house) and extramural (outside-house) contexts.

Fieldwork

Nine 1 X 1 m test units were excavated to varying depths at the Antelope Dreamer site (Figure 20). Three tests were individual 1 X 1 m units; two tests were combined to form a 1 X 2 m unit; and four tests were combined to form a 2 X 2 m unit (Table 19). The site was originally scheduled for only eight test units in the USACE Scope of Work (Appendix O), but an arrangement was made with Timothy R. Nowak (then the USACE South Dakota Field Archeologist) to shift a test unit to 39LM146 from 39LM149 after it became apparent that three tests rather than four were sufficient at the latter site. No attempt was made to collect diagnostic surface artifacts at the site in view of the thorough surface reconnaissance and collection made by UND.

Tests 1, 2, and 4 were placed beyond the limits of visible house depressions to sample the extramural artifactual content of the site. Test 3 was also initially supposed to be an extramural test. It was placed between two obvious house depressions (Features 6 and 7). Much to our surprise, Test 3 came down on the remains of an earthlodge that had no visible surface expression. This earthlodge was designated House 15 (or Feature 15). Test 3 was later expanded into a 1 X 2 m excavation through the addition of Test 9. The excavation of a 1 X 2 m unit at this location was desirable in order to expose more area of the wall of House 15, which was encountered in Test 3.

Tests 5-8 were combined to form a 2 X 2 m excavation into Feature 11, designated here as House 11. House 11 is the remains of the earthlodge that was systematically cored and generally configured by UND researchers (Figure 22). The excavation of a relatively large-sized unit into a confirmed structure was viewed as advantageous because it would provide considerable information on the artifactual content of intramural contexts. House 11 was selected because its floor plan was generally known from the UND coring exercise. The 2 X 2 m excavation was centered on the north one-third of the House 11 depression where additional hand coring suggested the presence of a hearth. This placement would roughly correspond to the back of the house, although the excavation was situated some distance inward from the north edge of the depression. The presumed hearth served as the primary target of the exploratory excavation into House 11.

Table 19. Test Unit Specifications and Combined Units, Antelope Dreamer Site (39LM146).

Test Unit	Context	Combined Units and Aggregate Size	Excavated Depth*	Excavated Volume*
1	Extramural	None - 1 X 1 m	100 cm	1.0 m^3
2	Extramural	None - 1 X 1 m	60 cm	0.6 m^3
4	Extramural	None - 1 X 1 m	60 cm	0.6 m^3
Subtotal, Extramural Tests				2.2 m^3
5	House 11	Tests 5-8 - 2 X 2 m	125 cm	1.25 m^3
6	House 11	Tests 5-8 - 2 X 2 m	125 cm	1.25 m^3
7	House 11	Tests 5-8 - 2 X 2 m	130 cm	1.30 m^3
8	House 11	Tests 5-8 - 2 X 2 m	125 cm	1.25 m^3
Subtotal, House 11 Tests				5.05 m^3
3	House 15	Tests 3&9 - 1 X 2 m	80 cm	0.8 m^3
9	House 15	Tests 3&9 - 1 X 2 m	75 cm	0.75 m^3
Subtotal, House 15 Tests				1.55 m^3
Total				8.8 m^3

*Does not include subfloor features in houses (i.e., F116 in House 11).

All extramural excavations (Tests 1, 2, and 4) were dug in 10 cm arbitrary levels. The sediment matrix from the extramural test levels was passed through one-quarter inch mesh hardware cloth screens. Intramural excavations were also dug in 10 cm arbitrary levels for the most part, with the exception of terminal levels to the house floors where a shift was made to levels of variable thickness following the contour of the floor. Some 5 cm levels were also dug in Tests 3 and 9 in the inner rooffall zone of House 15. Screening of the sediment matrix from intramural test levels was separated into water screen and dry screen fractions. A 33.3 X 33.3 cm square was removed from each intramural test level and subjected to water screening through one-sixteenth inch mesh window screen. The water screen material constitutes a one-ninth or 11 percent sample of each intramural test level. The remainder of the sediment from intramural test levels was dry screened over one-quarter inch mesh hardware cloth. The dry screen material thus comprises an eight-ninths or 89 percent sample.

Features other than houses, such as artifact concentrations, hearths, beams, and posts, were excavated in units of variable thickness and horizontal extent following their contours or outlines within test units. All such features at the site were encountered within the house excavations with the exception of Feature 118, a burned earth lens found near the base of Test 1. Various recovery techniques including flotation sampling, water screening, and dry screening were applied to these features, depending on their composition and artifactual and ecofactual potential. Posts and beams were removed in mass and not subjected to screening.

Geomorphic Context and Stratigraphy

The Antelope Dreamer site is located in the midst of what Coogan (1980) calls "Pierre Shale terrain." This topographic setting is referred to in this report as Missouri Breaks terrain or the Missouri Breaks zone. As Coogan's referent indicates, the Breaks zone consists primarily of eroded and exposed Pierre Shale bedrock (cf. Figure 19). The flatter ground in the Breaks zone is often covered by a mantle of loess, primarily along ridges and on hilltops, like the Antelope Dreamer site setting. Low-lying stream terraces are also frequently loess covered. A thin veneer of glaciofluvial gravels is sometimes present at the interface of the loess and bedrock units.

The geomorphic setting of the Antelope Dreamer site consists of a Pierre Shale hill or bench that is covered by a thick cap of loess. The loess is thickest at the western site margin and progressively thins downwind to the east. The progressive thinning of the loess cap in a general west to east direction indicates that eolian material blows up to the site from the Missouri bottomlands to the west during dust storms that follow the prevailing wind pattern. The high Missouri bluffs at the western edge of the site then act as a loess trap. As the wind passes over these high topographic features, it looses velocity and deposits eolian material from west to east, with most of it falling on the western part of the site near the bluff line. Scattered, small pebbles in the loess suggests a thin veneer of glaciofluvial gravels is present between the Pierre Shale and loess depositional units. These pebbles work their way into the loess cap primarily as a result of bioturbation by burrowing animals, especially rodents.

The more or less constant addition of loess parent material at the site has produced what is referred to as a cumulative soil profile (Birkeland 1984: 184-185). Cumulative soils are those that receive influxes of parent material while pedogenesis is ongoing; in essence, soil formation and deposition occur simultaneously at the same location. An overthickened A horizon, one that is being gradually and continually buried during soil formation, is a common feature of cumulative soils. Overthickened A horizons are present in several of the test unit profiles at Antelope Dreamer.

Profile Descriptions, Sediments, and Soils

The loess depositional unit consists of silt loam (SiL) of variable thickness. Beneath it is a clayey soil believed to be formed in decomposed Pierre Shale bedrock. The natural soils at the site consist of a general A/B/2B or 2C sequence, which is typical of upland settings in the area where loess mantles the bedrock. The construction and subsequent destruction of semisubterranean houses (earthlodges) at various locations throughout the site has interrupted the natural soil sequence. The excavation of house pits has removed portions of the naturally occurring A and B horizons, and the subsequent burning and collapse of the houses has interposed anthrosols consisting of a series of anthropic B/A horizons between the remaining natural soil units within the house remains. Juxtaposition of the anthropic soils with natural soil horizons will occur at the margins of the houses.

Anthrosols are soils that have been substantially modified, either intentionally or unintentionally, by past human activity (Eidt 1985:155). The subgroup "anthropic soils" includes those soils that were unintentionally changed by incidental activities, such as the construction of earth houses at Antelope Dreamer. The subgroup "anthropogenic soils" consists of those soils that were intentionally altered by humans to improve their properties for some purpose (e.g., for agricultural activities).

Also of general interest is a zone of scattered charcoal staining and flecking found in the surface A horizons of all test unit profiles, with the exception of Tests 5-8. No evidence was found at the site that would indicate that this zone was culturally induced. Rather, it is likely that it represents a natural fire event (prairie fire) across the site surface at some time in the recent past. Detailed soil descriptions for the profile discussions that follow can be found in Appendix C.

Extramural Tests. The thinning of the loess cap from west to east is amply demonstrated by the stratigraphy recorded in the extramural test units (Tests 1, 2, and 4) at Antelope Dreamer. The loess cap in Test 1, located near the western margin of the site, is in excess of 2 m thick. It contains a series of three A horizons (A/Ak/Abk) that extend to depth of about 75 cm (Figures 21B and 23). Collectively, these A horizons represent a cumulative or overthickened A horizon of a cumulative soil profile. The loess cap is much thinner in Test 2, located in the southeastern part of the site. Hand coring in Test 2 revealed that the loess unit terminates at a depth of about 70 cm, where a silty clay loam (SiCL) interpreted as a possible 2Bbk horizon formed on Pierre Shale bedrock was encountered. The single A horizon in Test 2 is also considerably thinner, extending to a mere 20 cm, which is insufficient to consider it a cumulative A (Figures 24 and 25A). Test 4,

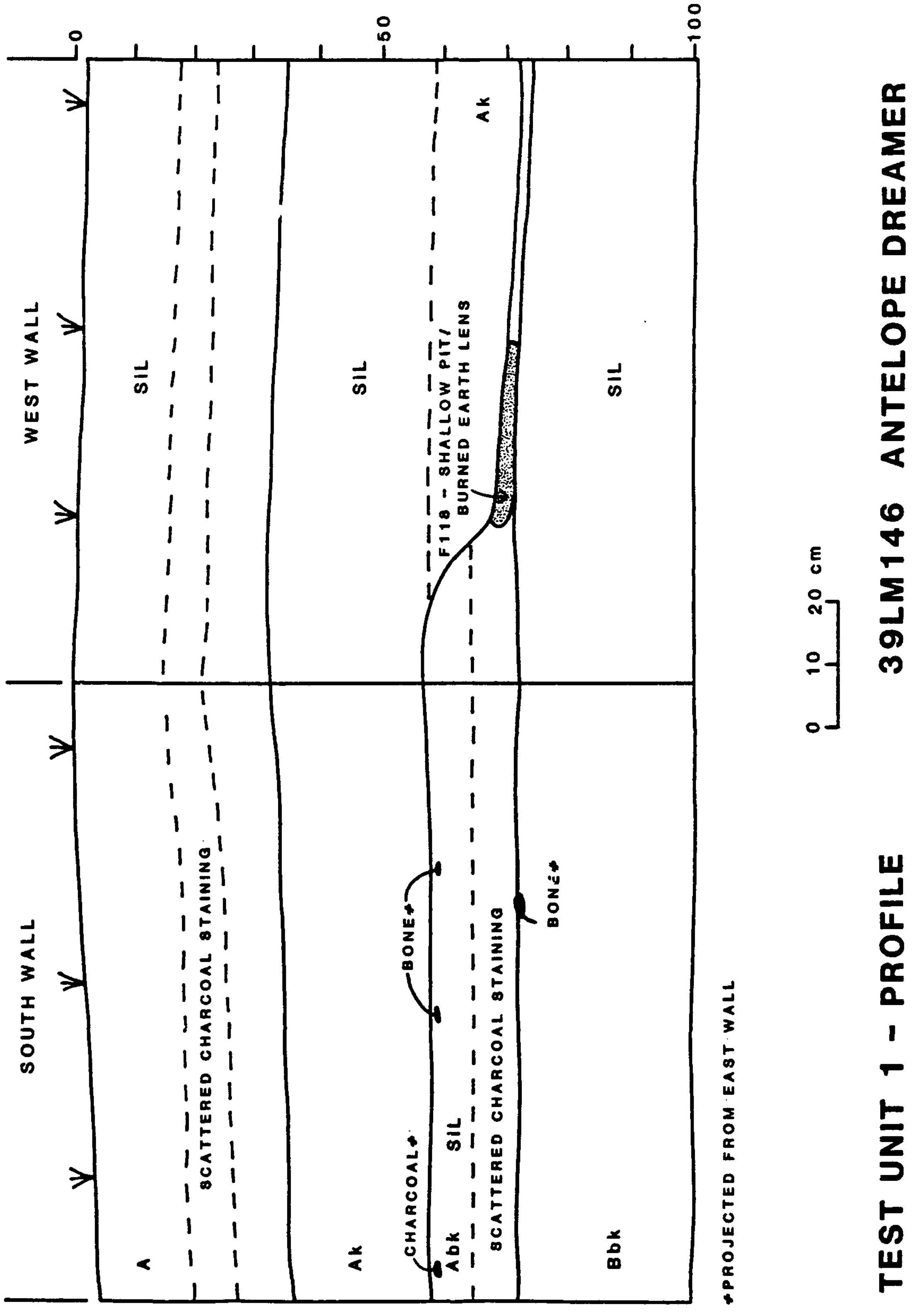


Figure 23. Profile Drawing of Test 1, Antelope Dreamer Site (39LM146).

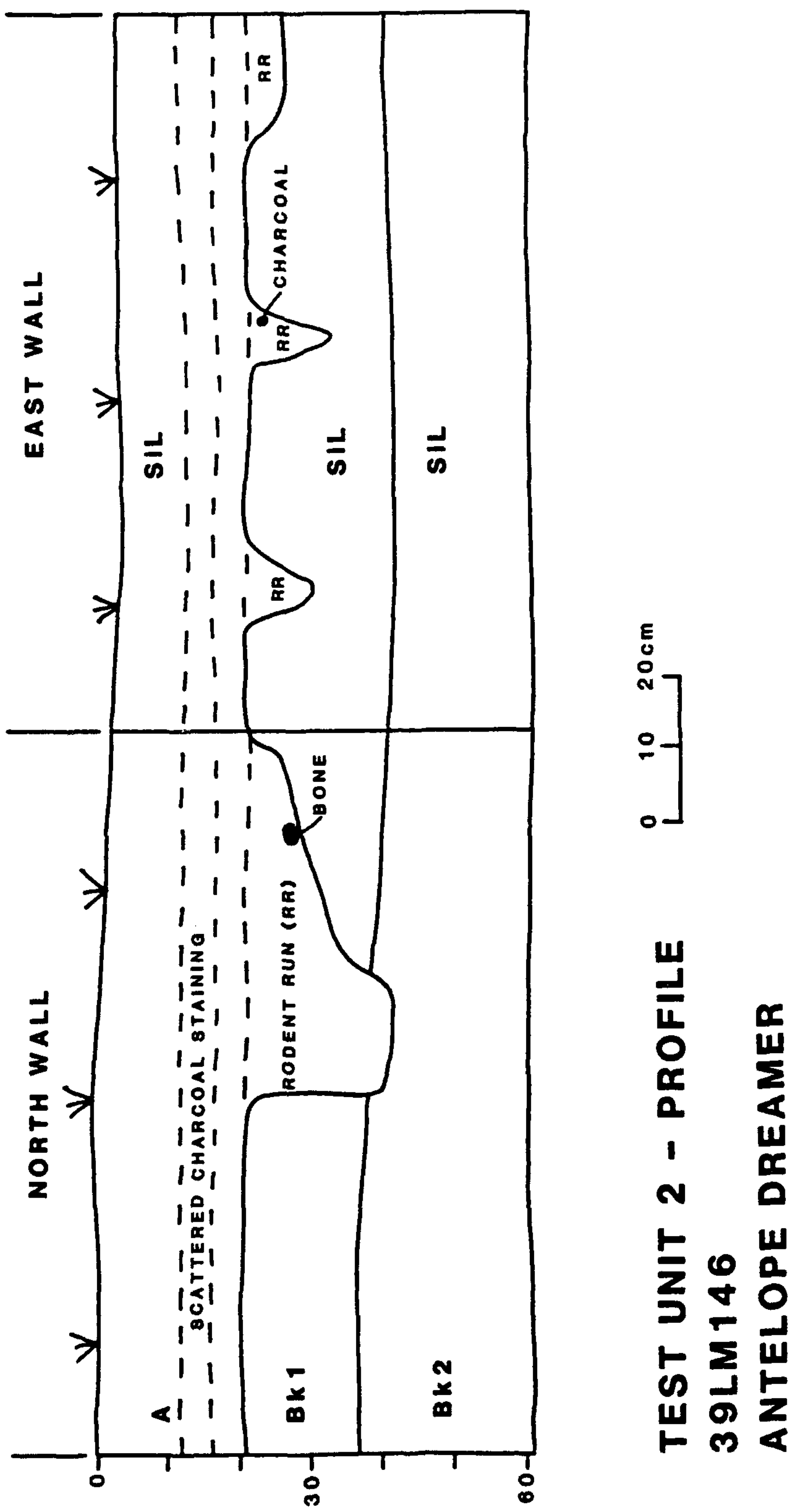
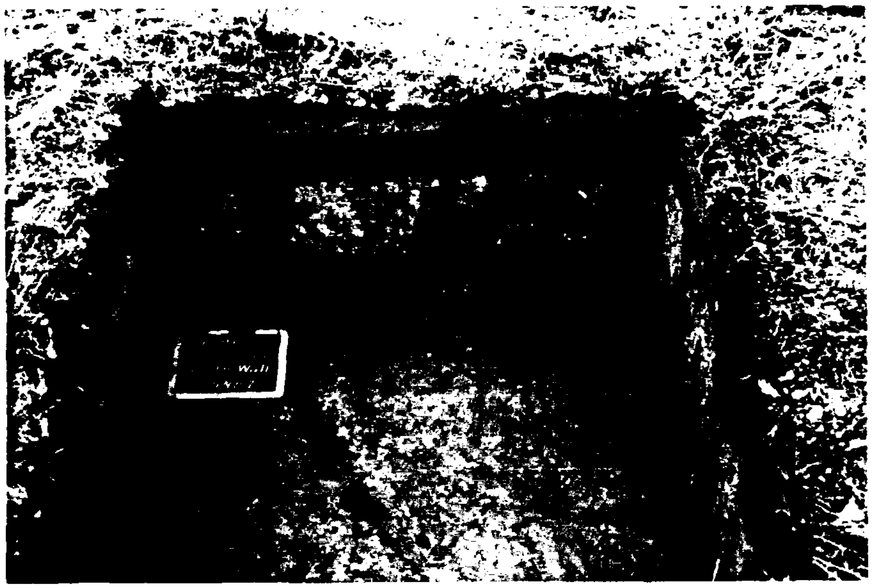


Figure 24. Profile Drawing of Test 2, Antelope Dreamer Site (39LM146).



A

B

Figure 25. Profile Photos of Test 2 and Test 4, Antelope Dreamer Site (39LM146). A: North wall of Test 2 (photo no. 2885, WCRM 1987). B: South wall of Test 4 (photo no. 2888, WCRM 1987).

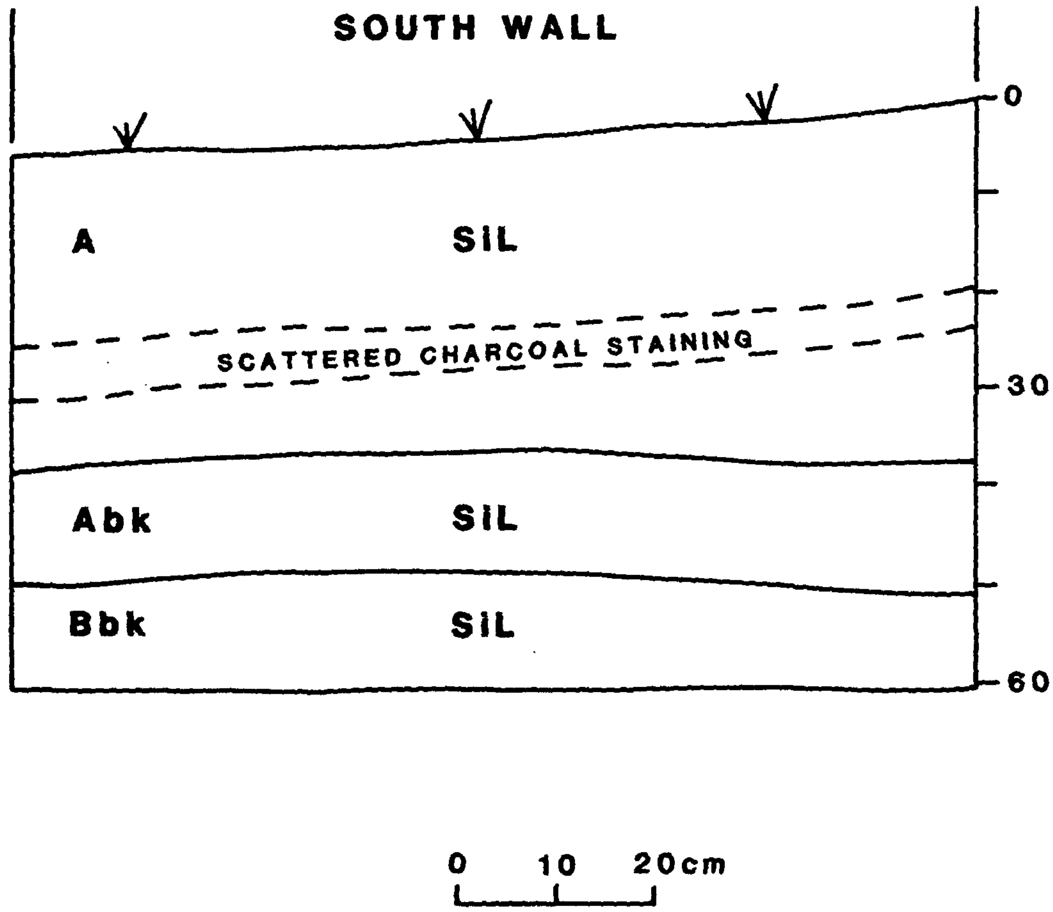
located in the northeastern part of the site, exhibits a loess unit of intermediate thickness between those in Tests 1 and 2. In Test 4, hand coring documented a change from loess to a clayey parent material (possible 2Bbk horizon) at a depth of about 140 cm. As might be expected, the aggregate A horizon in Test 4 is of intermediate thickness between those of Tests 1 and 2. Two A horizons (A/Abk) were recorded in Test 4 extending to a depth of approximately 50 cm (Figures 25B and 26). Collectively, the A horizons of Test 4 are thick enough to represent a cumulative A. Calcareous B horizons (Bk or Bbk) with visible accumulations of calcium carbonate were found beneath the A horizons in all of the extramural tests.

In addition to the zone of charcoal staining and flecking found in the A horizon in Test 1, discussed in general terms above, another such zone was observed in the lower portion of the Abk horizon (Figure 23). As is the case with the zone in the surface A, this lower zone of charcoal staining and flecking is thought to be a natural phenomenon resulting from an ancient prairie fire. It is possible, however, that the charcoal stained zone in the Abk was culturally induced.

Tests 3 and 9 (House 15). The stratigraphy in Tests 3 and 9 is complex owing to the interruption of the natural stratigraphic sequence by the construction of a semisubterranean earthlodge (Figures 27, 28, and 29). In Tests 3 and 9, a noncumulative A horizon was recorded to a depth of about 25 cm. Anthropic horizons designated by the subordinate departure "(anth)" were encountered immediately below the surface A (Figure 27). The Bk1(anth) horizon, consisting of the unburned and nonorganically enriched outer rooffall layer of the house, was encountered first. Beneath this were Ak1(anth) and Ak2(anth) horizons comprising two units of the inner rooffall layer. The Ak1(anth) horizon shows light to moderate evidence of burning and low to moderate organic enrichment; it is referred to as "inner rooffall (1)." The Ak2(anth) horizon shows evidence of heavy burning and high organic enrichment; it is referred to as "inner rooffall (2)." The inner rooffall (2) layer is relatively thin and lies directly atop the house floor.

The floor of House 15 was encountered at a depth of about 75 cm on what is interpreted as a clayey 2Coxb horizon formed on Pierre Shale bedrock. The natural B horizon (and the lower part of the A as well) that would ordinarily have been present beneath the surface A had been totally removed down to the 2Coxb by the excavation of the house pit, and was replaced in the natural soil profile by the anthropic soils created by the burning and collapse of the house. A portion of the natural B horizon (Bk2) was encountered along the eastern edge of Tests 3 and 9 between the Ak1(anth) and 2Coxb horizons where it formed the house pit wall ("subwall") (Figure 27). The presence of a 2Coxb horizon at a depth of only 75 cm indicates that a cumulative soil profile is not present in this part of the site. Therefore, Tests 3 and 9 provide another example of the thinning of the loess cap from west to east.

Tests 5-8 (House 11). Tests 5-8 were excavated into the north-central portion of the depression of House 11. The soil profile of Tests 5-8 shows a sequence of anthropic soil horizons similar to that seen in House 15. However, the natural soil horizons differ because once again we are dealing with a cumulative soil profile in the western site area (Figures 30, 31, and 32). A1 and A2 horizons were recorded to a depth of about 50 cm (Figure 30).



TEST UNIT 4 - PROFILE
39LM146
ANTELOPE DREAMER

Figure 26. Profile Drawing of Test 4, Antelope Dreamer Site (39LM146).

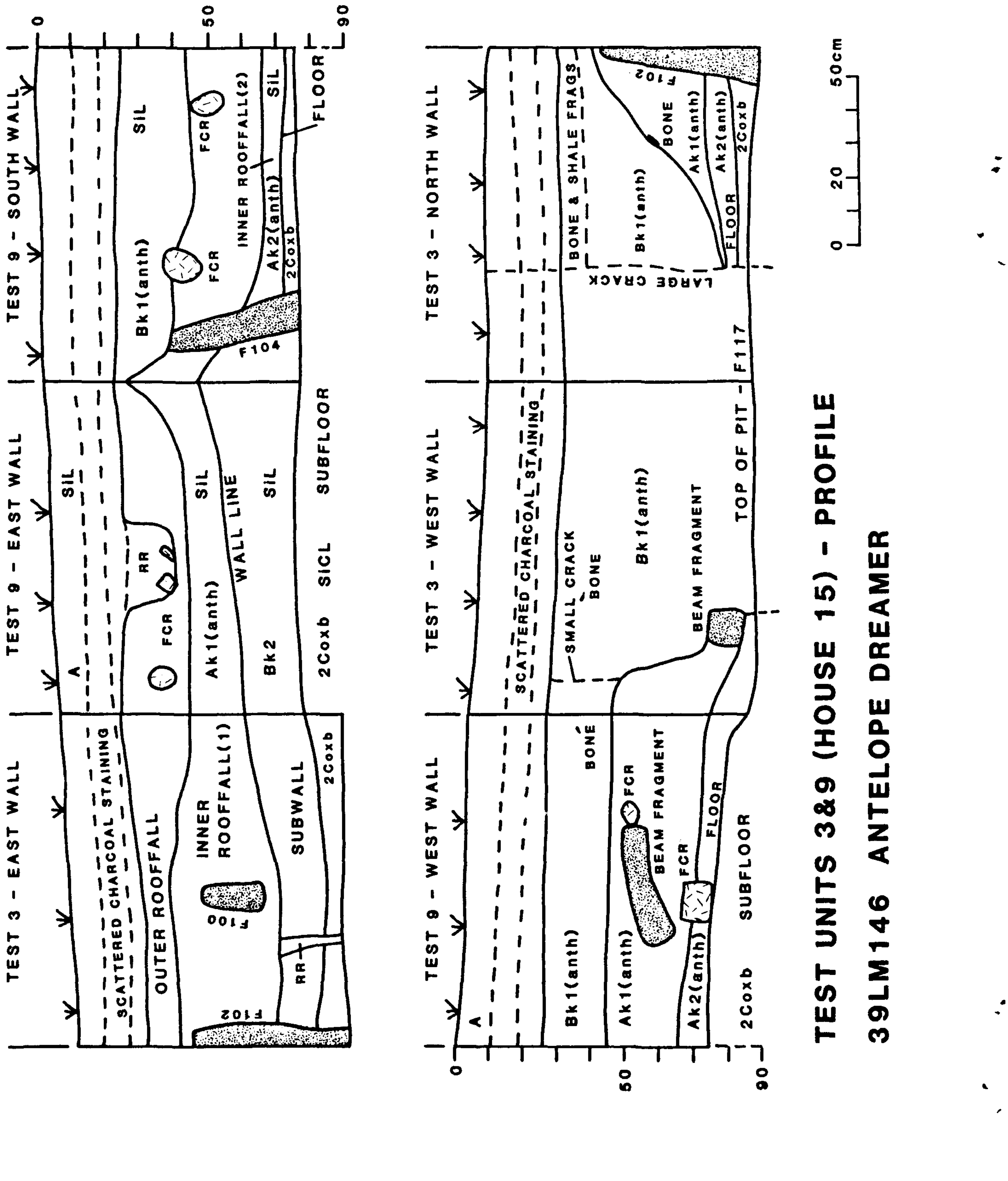
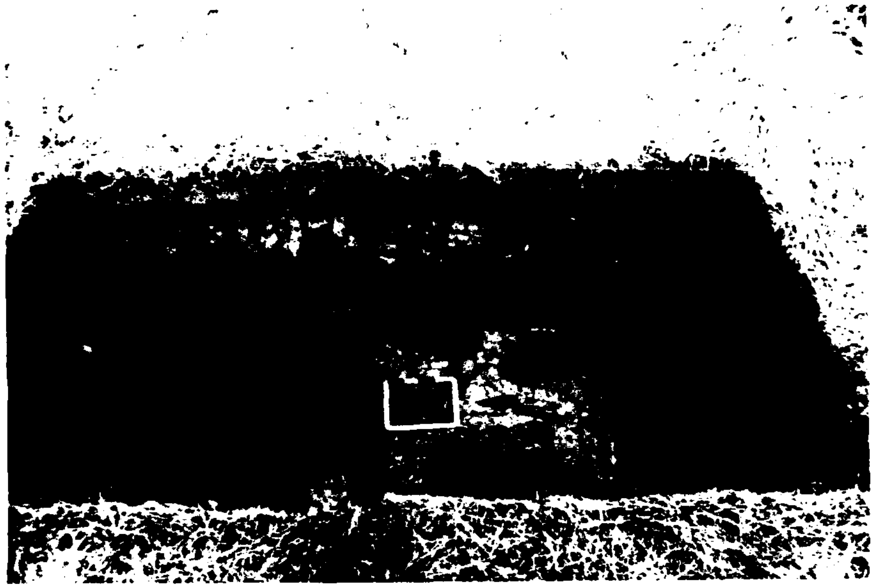


Figure 27. Profile Drawing of Tests 3&9, House 15, Antelope Dreamer Site (39LM146).



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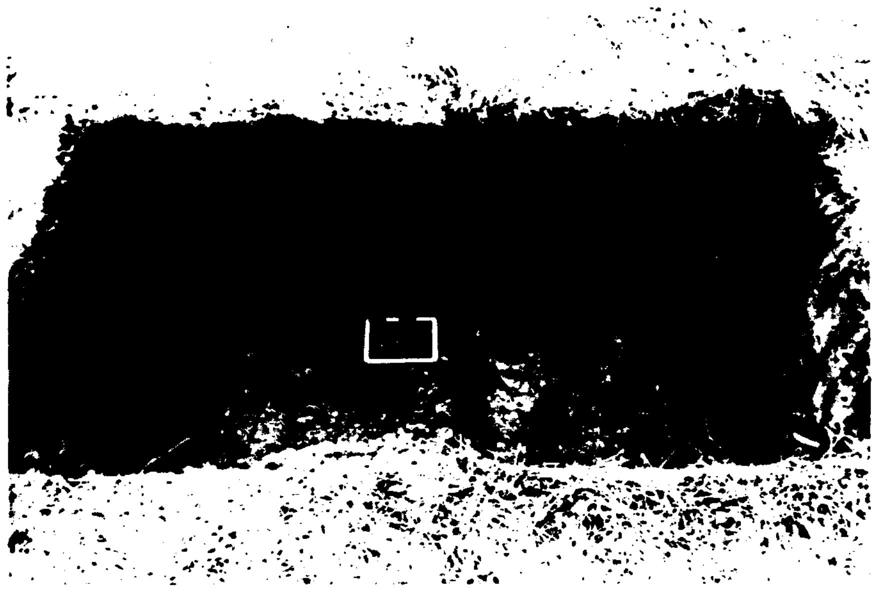
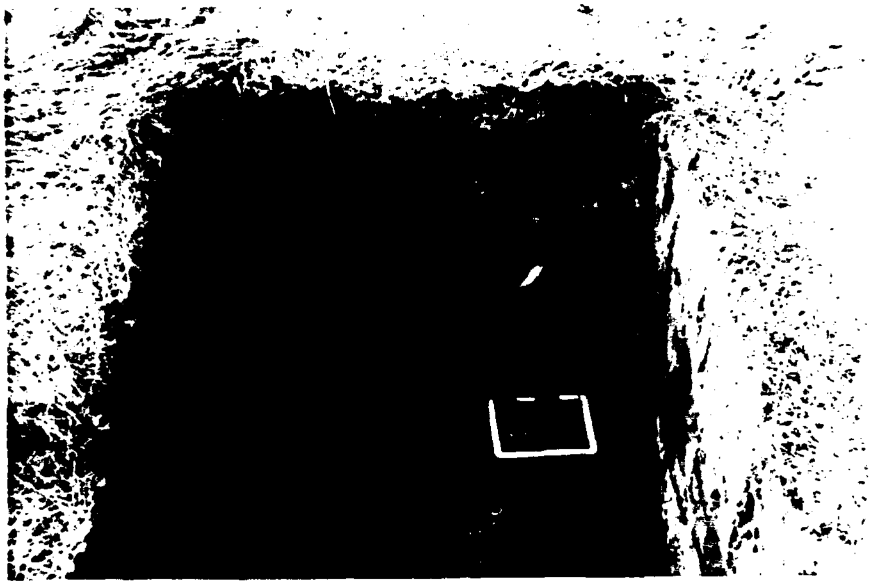
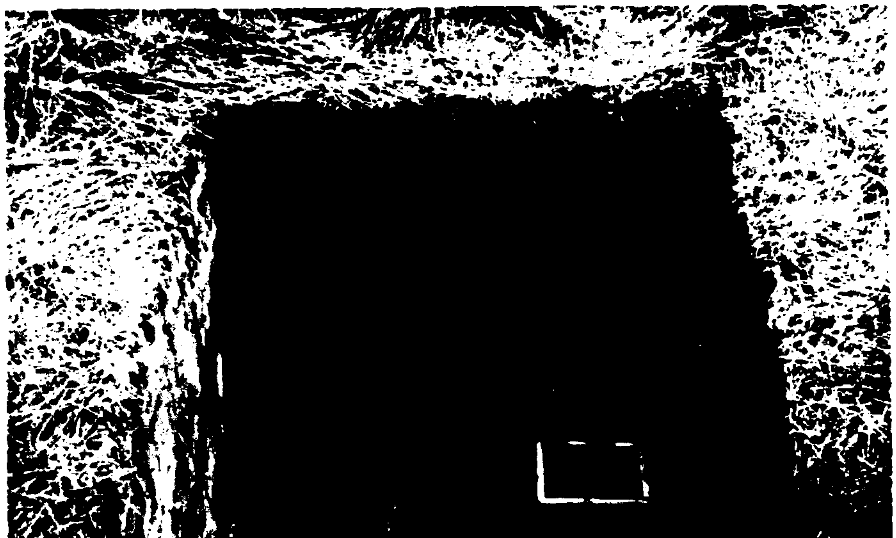


B

Figure 28. Profile Photos of Tests 3&9, House 15, Antelope Dreamer Site (39LM146). A: East wall of Tests 3&9 (photo no. 2890, WCRM 1987). B: West wall of Tests 3&9 (photo no. 2892, WCRM 1987).



A



B

Figure 29. Profile Photos of Tests 3&9, House 15, Antelope Dreamer Site (39LM146). A: North wall of Test 3 (photo no. 2895, WCRM 1987). B: South wall of Test 9 (photo no. 2896, WCRM 1987).

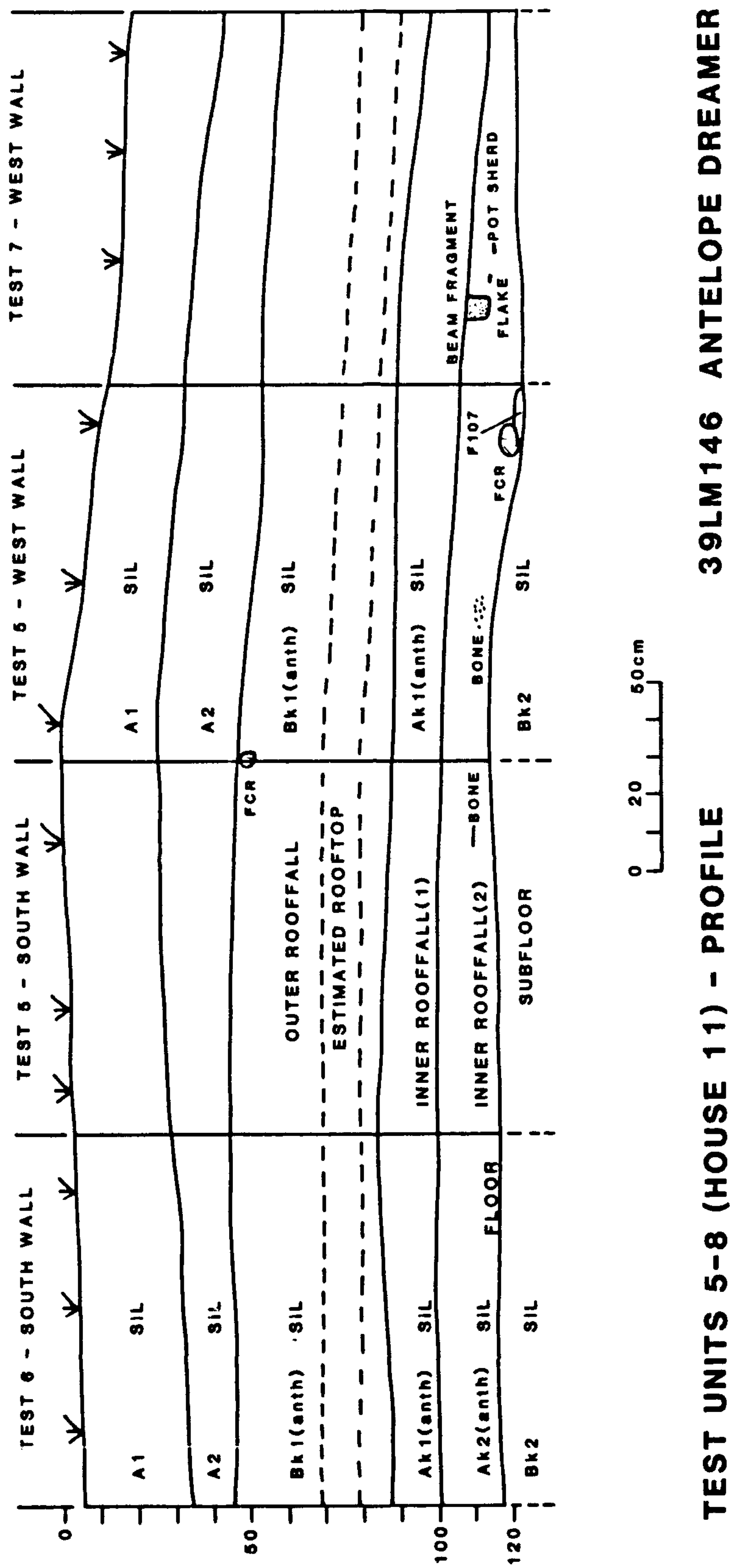
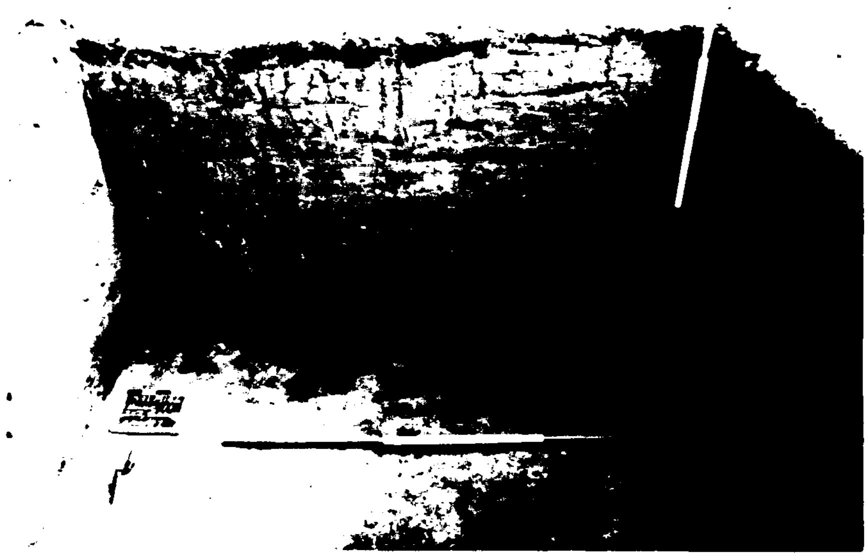


Figure 30. Profile Drawing of Tests 5-8, House 11, Antelope Dreamer Site (39LM146).



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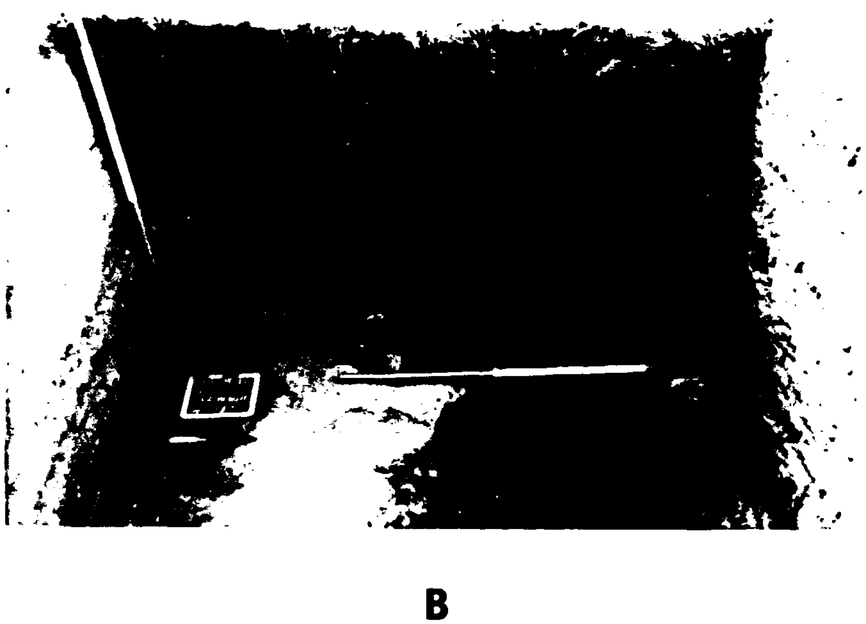
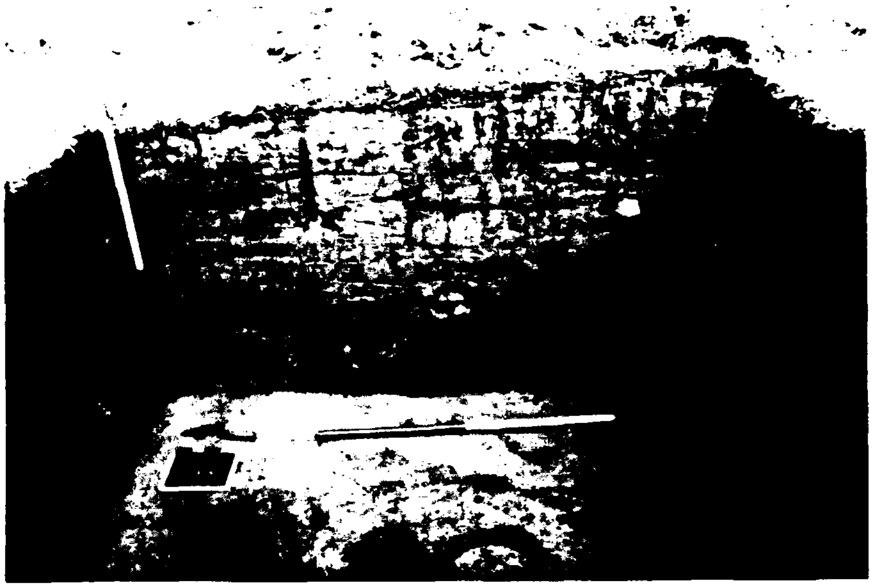


B

Figure 31. Profile Photos of Tests 5-8, House 11, Antelope Dreamer Site (39LM146). A: South wall of Tests 5&6 (photo no. 2905, WCRM 1987). B: West wall of Tests 5&7 (photo no. 2903, WCRM 1987).

A



B

Figure 32. Profile Photos of Tests 5-8, House 11, Antelope Dreamer Site (39LM146). A: North wall of Tests 7&8 (photo no. 2909, WCRM 1987). B: East wall of Tests 6&8 (photo no. 2907, WCRM 1987).

Considered as an aggregate, these horizons also represent an overthickened A. The Bk1(anth) or outer rooffall layer was present from about 50-90 cm. Vertical artifact distributions reveal relatively large quantities of cultural debris, especially pottery, bone, flaking debris, and fire-cracked rock, in the outer rooffall zone at about 70-80 cm. This arbitrary zone is thought to represent the actual rooftop of the house because it is known that certain activities by Plains Villagers took place on top of their houses. The outer rooffall above the rooftop zone is probably slopewash from the house perimeter that washed into the depression created by the collapse of the structure. This phenomenon is less apparent in House 15, which lacked a visible surface depression and was apparently not dug as deeply beneath the former ground surface as was House 11. In House 15 the rooftop zone appears to correlate with the surface of the outer rooffall layer (Figure 27).

Ak1(anth) or inner rooffall (1) and Ak2(anth) or inner rooffall (2) horizons were recorded immediately beneath the Bk1(anth) (Figure 30). As before, the inner rooffall (1) layer exhibits light to moderate burning and low to moderate organic enrichment, whereas the inner rooffall (2) layer is heavily burned and highly organic enriched. The inner rooffall (2) lies directly atop the house floor, which rests on a Bk2 horizon. A substantial amount of the natural B horizon (Bk2), as well as the lower part of the cumulative A horizon, were removed by the excavation of the house pit. These truncated soil horizons were then replaced in the natural soil profile by the anthropic soils created by the burning and collapse of the house. Hand coring in the floor of the House 11 tests revealed a clayey soil that is possibly a 2Bbk horizon formed on Pierre Shale bedrock at a depth of about 175 cm.

Cultural Associations

Historic (recent) artifactual debris can be found scattered about the site surface, especially where the dirt track road ends in the vicinity of the telephone pole ("lamppost"). A few whole bone elements from a large mammal (bison) were found in the upper levels of Tests 5 and 7 in the fill of the House 11 depression. These bone elements may represent an ephemeral component of unknown function and affiliation, but it seems more likely that they are from a natural kill that was scattered by scavengers. This "unknown/indeterminate" component is associated with the A1 horizon of Tests 5-8 (Figure 30), which suggests a relatively recent age, possibly even historic.

The primary component at the site consists of the prehistoric earthlodge village. Prehistoric artifacts were found in varying amounts throughout the upper portion of the loess cap covering the site area, in depths ranging from the present ground surface to in excess of 125 cm sd (surface depth). Obviously, vertical displacement from bioturbation and other natural processes has distributed minor amounts of artifactual debris throughout the loess above the actual village occupation surface or zone. Extramural tests isolated the village occupation zone at variable depths, extending from as little as 10-40 cm sd in the eastern part of the site, to as much as 50-80 cm sd in the western part of the site. These depths vary in proportion to the thickness of the loess deposited on the former occupation surface. The deepest cultural materials, those extending to about 125 cm sd, were associated with house floors that had been excavated as much as 50 cm beneath the former occupation surface (i.e., House 11). The remains of House 11, located in the western part of the site, extended from about 50-125 cm sd, from the surface of the

outer rooffall to the floor. House 15, located in the eastern part of the site, extended from about 20-75 cm sd, from the top of the rooffall to the floor. Subfloor features associated with the houses, such as pits, hearths, and posts, extend well below these depths.

The anthropic soils identified in intramural contexts (earthlodge remains) are undoubtedly a product of the village occupation. The identification of the village occupation zone in the extramural tests is somewhat more problematic owing to the variability observed in the natural stratigraphic sequence as a result of the thinning of the loess depositional unit from east to west at the site. Furthermore, subsurface disturbances resulting from natural processes and past human activities has blurred the village occupation surface to some degree in extramural contexts.

In Test 1, at the western margin of the site, the village occupation zone definitely correlates with the Abk horizon (Figure 23). Deciding which part of the Abk the village materials are associated with is a different matter. Most prehistoric artifactual debris in Test 1 comes from 70-80 cm sd, which corresponds to the lower portion of the Abk. However, the west wall of the test shows that much of the Abk had been dug out prehistorically, and a burned earth lens was observed in profile in the lower, remaining portion. This shallow pit and burned earth lens are jointly designated as Feature 118 (F118) (Figure 23). The precise nature of F118 is unclear, but it would seem to be of definite human origin, and its presence likely accounts for the majority of the artifacts from 70-80 cm sd in Test 1. The fact that the feature originates from the surface of the Abk indicates that the village occupation zone is in all probability associated with the surface of the Abk and not its base, as the vertical distribution of artifacts alone would seem to suggest.

In Test 2, located in the southeastern part of the site, the village occupation zone is apparently associated with the base of the A horizon (Figure 24). Most artifacts were recovered from this stratigraphic unit, but abundant rodent disturbance in Test 2 has displaced artifacts throughout the upper portion of the profile and no clear occupation zone could be delimited. However, the base of the A horizon in Test 2 generally corresponds to the surface of the Abk horizon in Test 1, lending further support to this interpretation. The paucity of artifactual remains in Test 4 makes the identification of the village occupation zone nearly impossible on the basis of artifactual data alone. However, consideration of what little data are available, as well as correlation of the stratigraphic units in Tests 1 and 4, would place the village occupation zone at the surface of the Abk horizon in Test 4.

To sum up, the anthropic soils identified as the remains of earthlodges are clearly a product of the village occupation and undoubtedly represent the village occupation zone within structural features at the site. In extramural contexts, the village occupation zone is generally associated with the base of the A horizon, whether cumulative or noncumulative. Where cumulative A horizons are present, the occupation zone is found at or near the surface of an Abk horizon. In the absence of a cumulative A, the occupation zone is correlated at or near the base of the surface A horizon.

Archeological Components, Radiocarbon Dates, and Analytic Units

On the basis of this research, and previous research at the site by UND, the Antelope Dreamer site is known to contain at least two and possibly three archeological components. These are, in chronological order:

1. Recent, Historic (ca. late A.D. 1800s-present);

2. Unknown/Indeterminate (historic?);

3. Plains Village, Initial Middle Missouri (ca. A.D. 1270).

The Initial Middle Missouri component, consisting of an earthlodge village occupation, is of primary interest to these investigations. No importance is attached to the historic component, which consists of minor amounts of recent trash scattered about the site surface, as well as the cast-iron telephone pole discussed previously. The unknown (indeterminate) component, if a reality at all, is also considered to be insignificant. Evidence of this component consists entirely of a few whole bison elements found in the upper levels of Tests 5 and 7 in the fill of the depression of House 11. It seems likely that these bones represent a natural kill of relatively recent age (historic period?) that was scattered by scavengers. However, a kill by humans cannot be entirely ruled out.

Six radiocarbon dates were run on materials recovered from undisputed Initial Middle Missouri contexts. Three of the samples consisted of burned corn cob fragments from the floor of House 11. The other three samples consisted of wood scrapings taken from the outer rings of three posts associated with House 15. After normalization, averaging, and calibration, these samples yielded a mean corrected age of ca. A.D. 1270 (late A.D. 1200s) for the Initial Middle Missouri village occupation at Antelope Dreamer. Details of the radiocarbon analysis are discussed in Section XIII.

The main thrust of the analysis of artifactual remains from the test excavations at Antelope dreamer is concerned with the evaluation of extramural (outside-house) versus intramural (within-house) contexts. Therefore, most data are organized according to Tests 1, 2, and 4 (extramural tests), Tests 3 and 9 (House 15), and Tests 5-8 (House 11). These data are drawn primarily from excavation units assigned to the Initial Middle Missouri component. The small quantities of Initial Middle Missouri remains from ephemeral contexts (i.e., those excavation units beyond the village occupation zone) will not be considered for the most part.

Features

In addition to the two partially excavated earthlodge structures, 19 other features (numbered F100-F118) were recorded in the test excavations at the site. These include post butts, beam fragments, a hearth, a cache pit, an artifact concentration, a shallow pit and burned earth area, and a rodent run. All of these features, with one exception, were associated with Houses 11 and 15.

Extramural Features

The only extramural feature encountered in the test excavations at the site consists of a what appears to be a shallow pit with an associated burned earth lens. This feature, designated F118, was observed in profile in the west wall of Test 1 from about 60-75 cm sd (Figures 21B and 23). It was not recognized during excavation, so no artifactual remains are specifically attributable to it. However, most of the material recovered from the Initial Middle Missouri occupation zone in Test 1 is believed to relate to F118.

The function of F118 is unclear. Apparently, a shallow basin was dug into the former occupation surface (Abk horizon), and a small fire was built to one side of the pit creating the lens of burned earth. Except for the burned earth lens and a few scattered pieces of charcoal in the surrounding soil matrix, no other remains from the fire were observed. The feature is difficult to see, except in profile, and it does not seem to have been used very intensively.

House 11 and Associated Features

The 2 X 2 m excavation into House 11 (Tests 5-8) was centered on the rear portion of the structure where hand coring suggested the location of a hearth. An excavation of this size into a relatively large structure will reveal little about its architectural features. However, it would appear on the basis of this excavation and the hand coring conducted by UND that House 11 is a "typical" Middle Missouri tradition earthlodge (cf. Alex 1973; Caldwell and Jensen 1969; Lehmer 1971; Lehmer et al. 1973). Middle Missouri tradition houses ordinarily consisted of a long, rectangular pit for the house floor that was usually excavated to some depth below the former occupation surface. A rectangular frame of posts and beams was then constructed over the pit to support the walls and roof. Alex (1973) reports walls of wattle and daub construction banked nearly to the roof with thick layers of earth and debris for Initial Middle Missouri houses at the Mitchell site (39DV2). The roofs of the Mitchell houses were constructed of a framework of poles covered by small branches and a thick grass mat (thatch). No conclusive evidence of an earth or sod layer covering the house roofs was found at the Mitchell site.

A somewhat different method of construction is reported for Extended Middle Missouri houses at the Bagnell site (32OL16) in North Dakota (Lehmer et al. 1973). At Bagnell, the house walls were constructed of split puncheons (leaners) covered by small branches, grass matting, and earth or sod. The walls leaned inward toward the house floor, resting on upright posts around the perimeter of the floor, that also supported the outer roof. This method of wall construction formed a covered area around the perimeter of the house between the upright posts and sloping walls that could have been used for storage. Roof construction at Bagnell was similar to that described at Mitchell, except that the roofs of the houses at Bagnell were apparently covered by a layer of earth or sod.

Structural data from Tests 5-8 are insufficient to determine the actual method of construction for House 11. Techniques similar to those employed at either the Mitchell site or the Bagnell site are equally plausible. However, the stratigraphy recorded in the test unit profiles, and the estimated location of the rooftop, indicate that the roof of House 11 at Antelope

Table 20. Summary Data on House 11 Features, Antelope Dreamer Site (39LM146).

Feature Number	Feature Type	Dimensions	Remarks
107	Artifact Concentration	N-S: 50 cm E-W: 24 cm Thickness: 8 cm	Mostly burned floral remains; corn cob fragments, seeds, grass.
110	Beam	Length: 8 cm Width: 7 cm Thickness: 5 cm	Remains of burned roof beam; wood charcoal; cottonwood.
111	Beam	Length: 24 cm Width: 12 cm Thickness: 2 cm	Remains of burned roof beam; wood charcoal; juniper.
112	Beam	Length: 35 cm Width: 14 cm Thickness: 3 cm	Remains of burned roof beam; wood charcoal; juniper.
113	Beam	Length: 10 cm Width: 10 cm Thickness: 3 cm	Remains of burned roof beam; wood charcoal; species unknown (too fragmented).
114	Beam	Length: 48 cm Width: 15 cm Thickness: 3 cm	Remains of burned roof beam; wood charcoal; cottonwood.
115	Beam	Length: 75 cm Width: 15 cm Thickness: 2 cm	Remains of burned roof beam; wood charcoal; cottonwood.
116	Hearth	Av.Diam.: 155 cm Av.Depth: 20 cm	Large hearth toward rear of house; volume = 0.38 cu m.

Dreamer was indeed covered by approximately 40 cm of earth, but not earth consisting of a "sod" layer. The low level of organic matter in the outer rooffall of House 11 indicates this material derives from a subsurface B horizon, not a surface A (sod layer), hence its designation as Bk1(anth) (Figure 30). The organic enrichment of the Ak1(anth) and Ak2(anth) horizons, comprising the inner rooffall zone, doubtless derives from the burning and decomposition of wood and other plant materials used to construct the inner supporting framework of the roof.

Summary data on features found in Test 5-8 and associated with the floor of House 11 are presented in Table 20. Most of these features consisted of burned beam fragments lying on the house floor that had been reduced to charcoal (Figures 33 and 34). Removal of the beam fragments caused them to fragment even further. Identified specimens include both cottonwood and

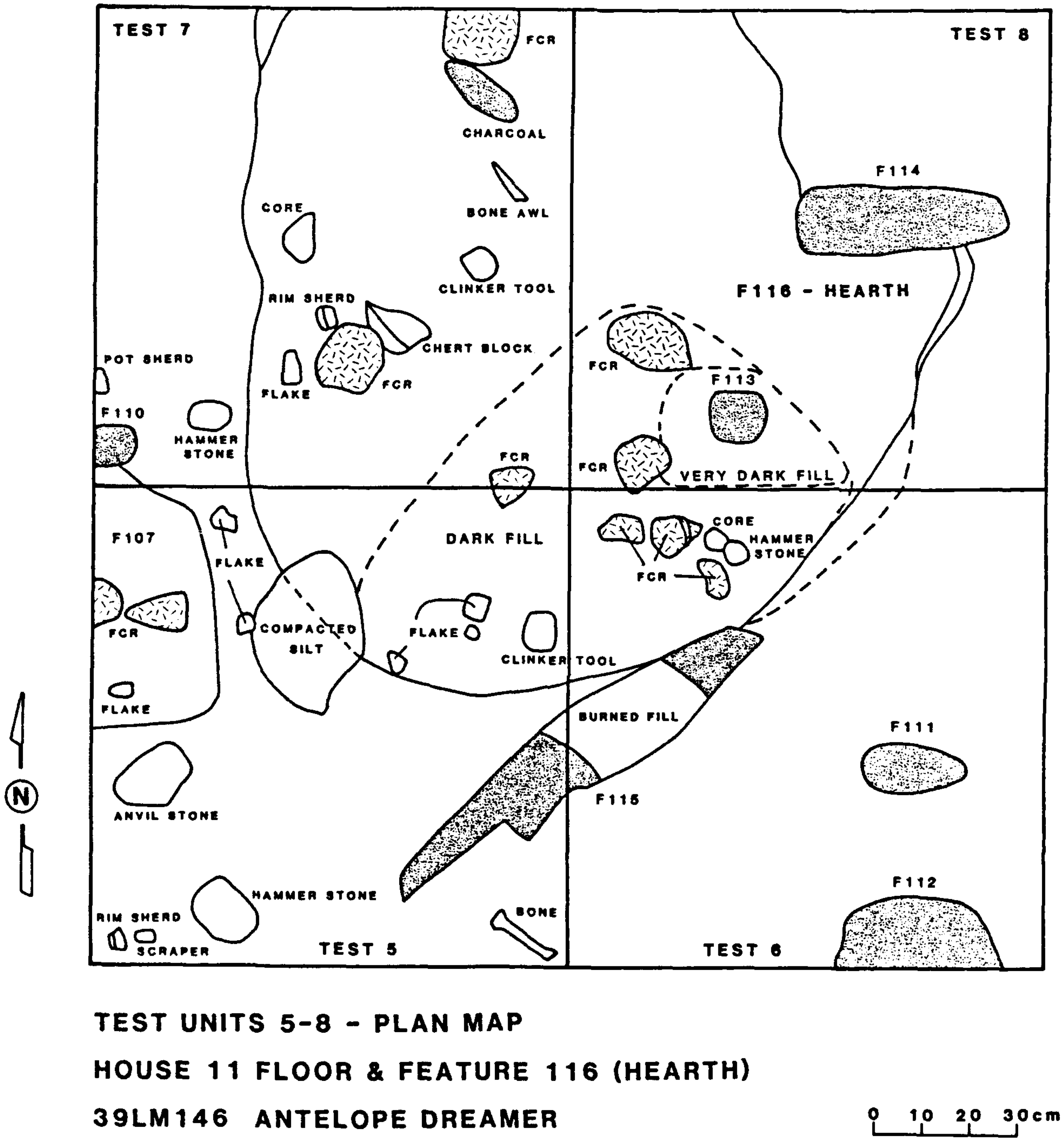
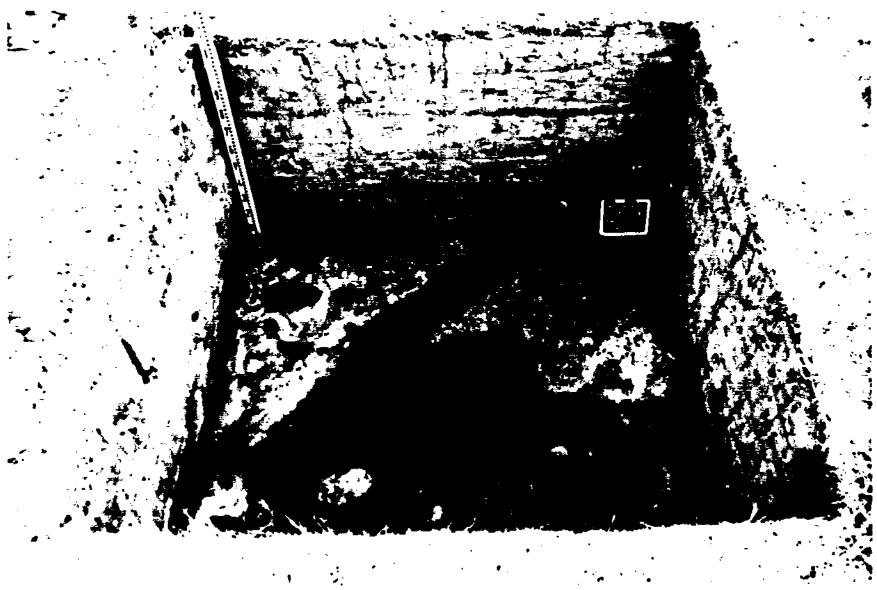


Figure 33. Plan View Drawing of Tests 5-8, Floor of House 11, Antelope Dreamer Site (39LM146).

A



B

Figure 34. Plan View Photos of Tests 5-8, House 11, Antelope Dreamer Site (39LM146). A: Floor of House 11, north view (photo no. 2868, WCRM 1987). B: Floor of House 11, south view (photo no. 2869, WCRM 1987).

juniper (Appendix A; Van Ness, this report). A large basin-shaped hearth designated F116 covered most of the excavated area of the house floor (Figures 35 and 36A). An artifact concentration (F107) consisting primarily of burned plant remains, including corn cobs and cob fragments, various seeds, and some grass, was found on the floor of the house immediately to the southwest of the hearth (Figure 33).

House 15 and Associated Features

The 1 X 2 m excavation into House 15 (Tests 3 and 9) came down on a portion of the outer (eastern) wall of the structure. Part of the wall was accidentally dug away during excavation, leaving a clean profile of the house wall which lends itself well to stratigraphic study (Figure 27). The assumed orientation of House 15 is illustrated in Figure 20; its size and orientation were not confirmed by hand coring. House 15 left no visible surface depression, and the initial placement of Test 3 over its remains was purely fortuitous. Test 3 was later expanded to a 1 X 2 m excavation by the addition of Test 9 in order to expose more of the wall section. The pit of House 15 does not appear to have been dug in as deeply as that of House 11, which likely accounts for the absence of a noticeable surface depression. While some interesting structural details were uncovered in Tests 3 and 9, insufficient data are available to suggest an overall plan of construction for House 15.

Summary data on features recorded in the House 15 excavation are presented in Table 21. Five of these features consist of the butt portions of upright peripheral posts set into the house floor, directly against the wall of the house pit (Figures 36B and 37). Both cottonwood and juniper are represented in identified wood samples from three of the posts (F100, F101, and F103) (Appendix A; Van Ness, this report). Two of the posts were only partially uncovered in the corners of the excavation and they were not removed (F102 and F104). The peripheral posts in House 15 clearly leaned outward from the house pit, against the slightly sloping pit wall, at an angle of about 10-20 degrees from the vertical to the house floor (Figures 27 and 29B). Excavated specimens range in maximum diameter from about 8.0-8.3 cm. The portions of the post butts protruding above the house floor had burned, which may have reduced their circumference to some extent. However, this size reduction is judged to be minor, and it is thought that the posts were originally no more than about 10 cm in diameter. The subfloor portions of the posts were unburned, but decay of the uncharred wood had reduced their diameters to a maximum of about 5 cm. The post holes for the peripheral posts were dug approximately 25-30 cm beneath the level of the house floor.

Other cultural features uncovered in House 15 include three beam fragments, two of which were identified as juniper (F105 and F106), and a subfloor cache pit. The orifice of the cache pit (F117) was only partially uncovered in the floor of Test 3 (Figures 37). It was not excavated, but hand coring suggests that the pit extends to a depth of about 80 cm beneath the house floor. An astute observer may have noted that no inner rooffall (Ak1(anth) and Ak2(anth) horizons) is present in the west and north wall profiles of Test 3 above the cache pit orifice (Figure 27). This indicates that the cache pit was open when the house collapsed, filling it with material from the inner part of the roof. This observation was confirmed by hand coring in the cache pit. The wall and roof of House 15 were covered by a

Table 21. Summary Data on House 15 Features, Antelope Dreamer Site (39LM146).

Feature Number	Feature Type	Dimensions	Remarks
100	Post	Length: 64 cm Max.Diam.: 8.3 cm	Butt of house wall post; juniper.
101	Post	Length: 55 cm Max.Diam.: 8.0 cm	Butt of house wall post; cottonwood.
102	Post	Unknown	Butt of house wall post; in wall of test, not removed; species unknown.
103	Post	Length: 58 cm Max.Diam.: 8.3 cm	Butt of house wall post; juniper.
104	Post	Unknown	Butt of house wall post; in wall of test, not removed; species unknown.
105	Beam	Length: 65 cm Width: 5 cm Thickness: 3 cm	Remains of burned roof beam; partially intact, wood and charcoal; juniper.
106	Beam	Length: 40 cm Width: 5 cm	Remains of burned roof beam; wood charcoal; juniper.
108	Rodent Run	NA	Rodent disturbance in house floor.
109	Beam	Unknown	Remains of burned roof beam; in test wall, not removed; wood charcoal; species unknown.
117	Pit	Diam.: Unknown Depth: ca. 80 cm	Subfloor cache pit; not excavated; depth by hand coring.

blanket of earth ranging from about 25 cm in thickness at the wall line to about 40 cm in thickness inside the house pit. The stratigraphic units observed in the rooffall zone of House 15 are virtually identical to those in House 11, indicating a similar origin for these anthropic horizons (cf. Figures 27 and 30).

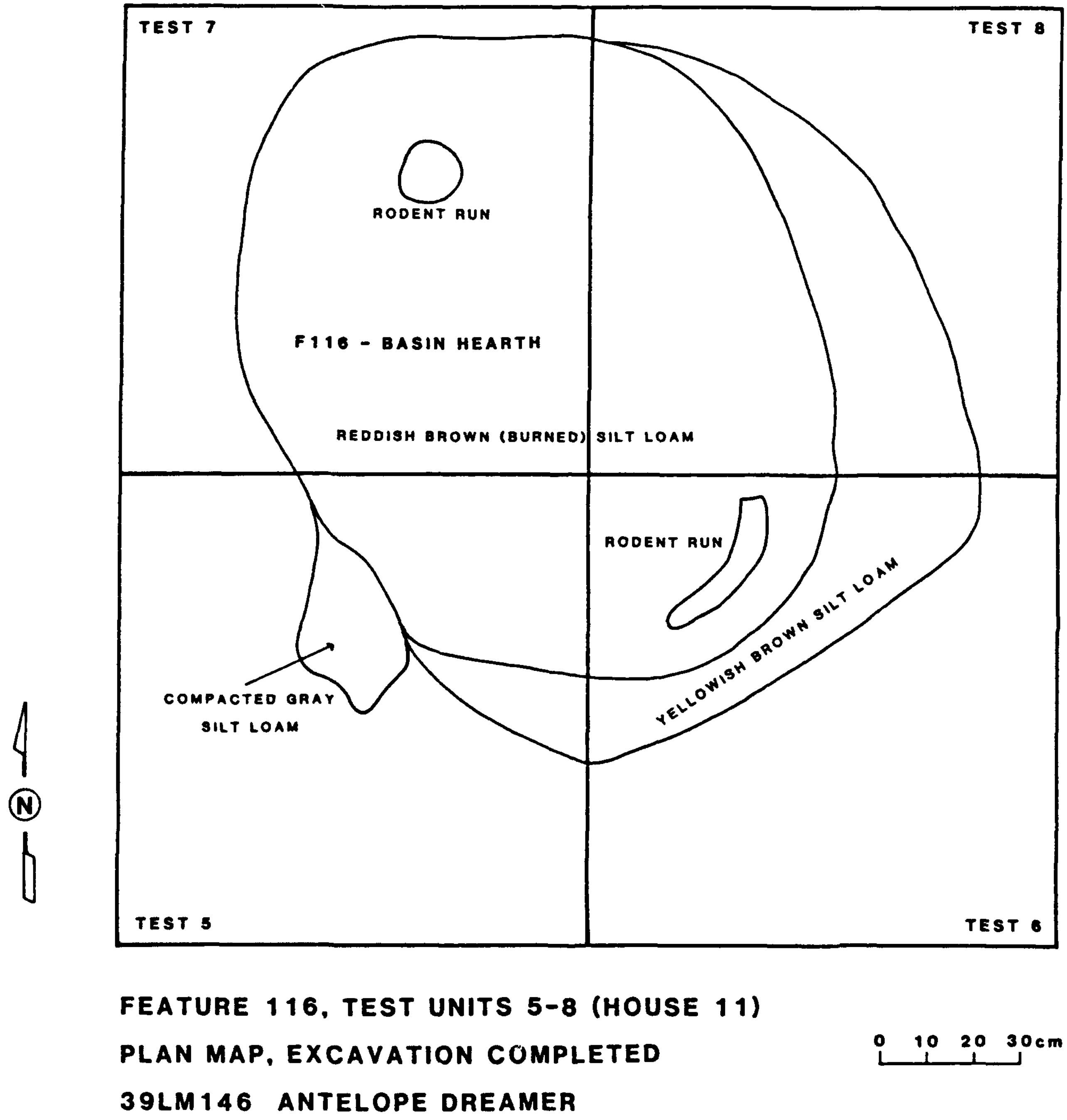


Figure 35. Plan View Drawing of Feature 116 (Basin Hearth), Tests 5-8, Floor of House 11, Antelope Dreamer Site (39LM146).

A

B

Figure 36. Photos of House 11 and House 15 Features, Antelope Dreamer Site (39LM146). A: Profile/partial excavation of Feature 116 (basin hearth), Tests 5-8, House 11, north view (photo no. 2898, WCRM 1987). B: Tests 3&9, floor and wall line of House 15 with posts and beams, south view (photo no. 2884, WCRM 1987).

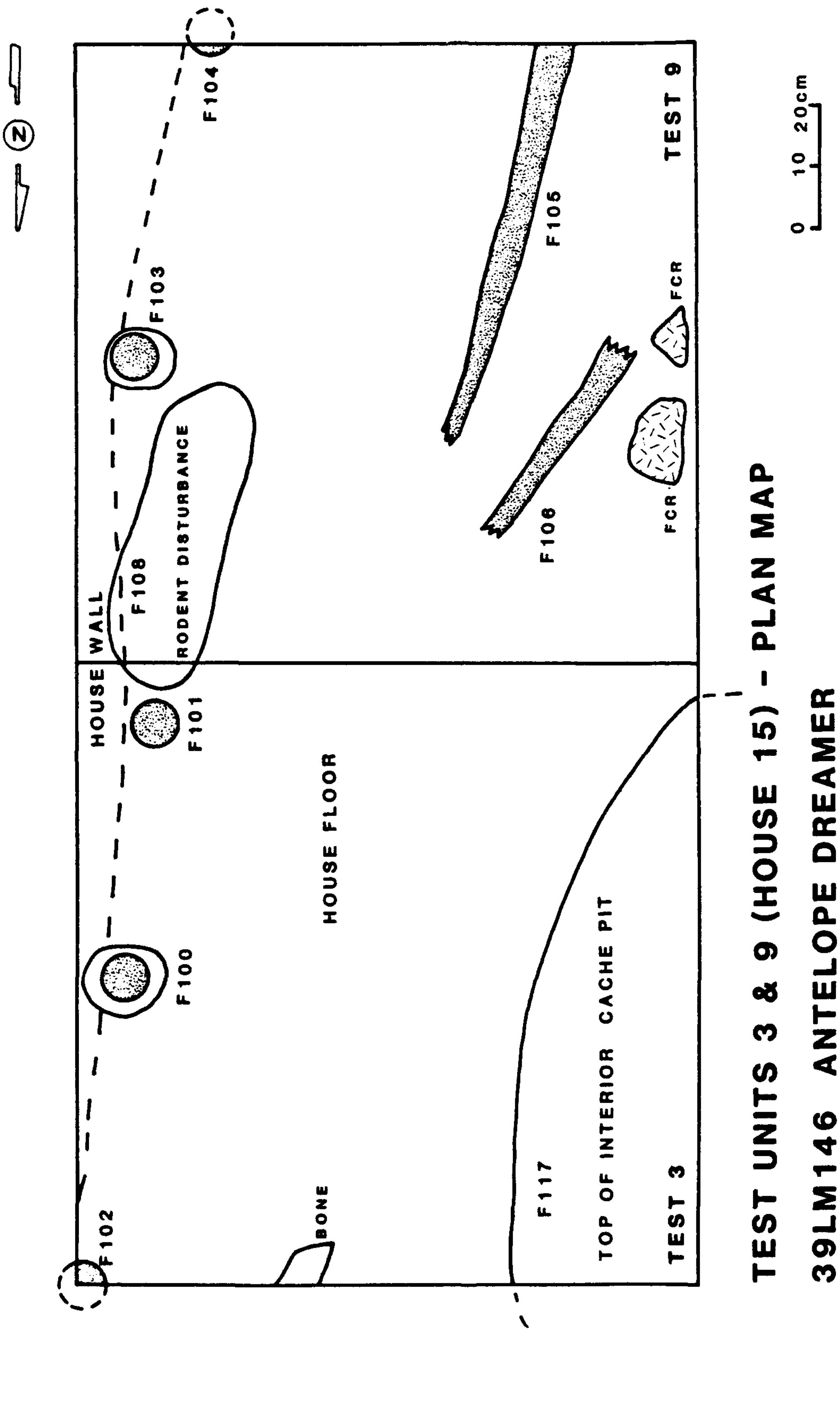


Figure 37. Plan View Drawing of Tests 3&9, Floor of House 15, Antelope Dreamer Site (39LM146).

Native Ceramics

Native ceramic sherds recovered from the test excavations at Antelope Dreamer total 1443 G1-3 sized specimens, including 1410 body sherds and 33 rim sherds. No definite evidence of multiple prehistoric components is present in the ceramic assemblage, and all of the ceramics from the site are attributed to the village component. Overall, the Antelope Dreamer ceramics are typical of an Initial Middle Missouri variant assemblage, and they are one of the primary criteria for the identification of the village component as Initial Middle Missouri.

The ceramic sample is highly fragmented. No complete or even partially complete and reconstructable vessels are present in the collection, although it was possible to reconstruct a portion of the shoulder of one of the larger rim sections. Most sherds appear to be from globular-shaped jars. Overall, the ceramics from Antelope Dreamer are moderately thick and fairly well made. The paste is compact and tempered with crushed granite (grit). Gray colors predominate, with some brown, grayish black, and a few buff sherds.

Only body sherds recovered from contexts assigned to the Middle Missouri occupation zone are considered in detail. This includes a total of 1384 G1-3 specimens, eliminating 26 body sherds, most of which are small (G3) fragments recovered from ephemeral contexts in the loess overlying the Initial Middle Missouri occupation zone. All rim sherds recovered from the site are given detailed treatment because only one was found in an ephemeral context and all relate to the Initial Middle Missouri village component.

Body Sherds

The body sherd sample from the Initial Middle Missouri occupation zone at Antelope Dreamer consists of 1384 specimens, including 5 G1, 206 G2, and 1173 G3 sherds. Of this number, 46 sherds were recovered from extramural test units, 1037 were recovered from the House 11 test units, and 301 were found in House 15 test units (Table 22).

Body sherd surface treatments were recorded for all G1-2 sized specimens (Table 23). Classifiable body sherds are dominated by plain/smoothed (47.7%) and cord roughened (40.4%) surface treatments. Simple stamping was observed on 8.6% of the classifiable sherds. While simple stamping is not a characteristic trait of Initial Middle Missouri assemblages, it is present in minor amounts in most Grand Detour phase assemblages, ranging from a low of 0.2% to a high of 8.1% (Caldwell and Jensen 1969:50). The 8.1% value recorded at the nearby Langdeau site (39LM209) is equivalent to the 8.6% value recorded at Antelope Dreamer. Other surface treatments include one brushed sherd (0.7%) and four decorated sherds (2.6%). An additional 38 body sherds are recorded as indeterminate. Brushed sherds are also atypical of Initial Middle Missouri assemblages, but they, too, are present in extremely small quantities in most Grand Detour phase assemblages (Caldwell and Jensen 1969:50). The four decorated body sherds consist of shoulder fragments with incised/trailed designs. All of the simple stamped and decorated sherds are from House 11. The single brushed sherd is from House 15.

Table 22. Native Ceramic Body Sherd Size Grade Data by Test Unit and Context, Initial Middle Missouri Zone, Antelope Dreamer Site (39LM146).

Test Unit Number		Size Grade Grade 1	Grade 2	Grade 3	Total
Extramural Tests					
1	n	-	3	32	35
	%	-	8.6	91.4	100.0
2	n	-	3	8	11
	%	-	27.3	72.7	100.0
4	n	-	-	-	-
	%	-	-	-	-
Subtotal	n	-	6	40	46
	%	-	13.0	87.0	100.0
House 11 Tests					
5	n	1	71	393	465
	%	0.2	15.3	84.5	100.0
6	n	-	46	211	257
	%	-	17.9	82.1	100.0
7	n	2	18	193	213
	%	0.9	8.5	90.6	100.0
8	n	-	7	95	102
	%	-	6.9	93.1	100.0
Subtotal	n	3	142	892	1037
	%	0.3	13.7	86.0	100.0

Table 22. Native Ceramic Body Sherd Size Grade Data by Test Unit and Context, Initial Middle Missouri Zone, Antelope Dreamer Site (39LM146) (Continued).

Test Unit Number		Size Grade			Total
		Grade 1	Grade 2	Grade 3	
House 15 Tests					
3	n	-	29	132	161
	%	-	18.0	82.0	100.0
9	n	2	29	109	140
	%	1.4	20.7	77.9	100.0
Subtotal	n	2	58	241	301
	%	0.7	19.3	80.1	100.1
Total	n	5	206	1173	1384
	%	0.4	14.9	84.7	100.0

Table 23. Native Ceramic Body Sherd Surface Treatment Data by Test Unit and Context, Size Grades 1 and 2 Only, Initial Middle Missouri Zone, Antelope Dreamer Site (39LM146).

Test Unit		Cord Roughened	Plain/ Smoothed	Simple Stamped	Brushed	Decor- ated	Total Class.	Indet.	Total
Extramural Tests									
1	n	1	1	-	-	-	2	1	3
	%*	50.0	50.0	-	-	-	100.0	-	-
2	n	2	1	-	-	-	3	-	3
	%	66.7	33.3	-	-	-	100.0	-	-
4	n	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-
Sub- total	n	3	2	-	-	-	5	1	6
	%	60.0	40.0	-	-	-	100.0	-	-

Table 23. Native Ceramic Body Sherd Surface Treatment Data by Test Unit and Context, Size Grades 1 and 2 Only, Initial Middle Missouri Zone, Antelope Dreamer Site (39LM146) (Continued).

Test Unit		Cord Roughened	Plain/ Smoothed	Simple Stamped	Brushed	Decor- ated	Total Class.	Indet.	Total
House 11 Tests									
5	n	25	19	7	-	4	55	17	72
	%*	45.5	34.5	12.7	-	7.3	100.0	-	-
6	n	14	14	3	-	-	31	15	46
	%	45.2	45.2	9.7	-	-	100.1	-	-
7	n	4	9	3	-	-	16	4	20
	%	25.0	56.2	18.8	-	-	100.0	-	-
8	n	1	4	-	-	-	5	2	7
	%	20.0	80.0	-	-	-	100.0	-	-
Sub-	n	44	46	13	-	4	107	38	145
total	%	41.1	43.0	12.2	-	3.7	100.0	-	-
House 15 Tests									
3	n	6	8	-	-	-	14	15	29
	%	42.9	57.1	-	-	-	100.0	-	-
9	n	8	16	-	1	-	25	6	31
	%	32.0	64.0	-	4.0	-	100.0	-	-
Sub-	n	14	24	-	1	-	39	21	60
total	%	35.9	61.5	-	2.6	-	100.0	-	-
Total	n	61	72	13	1	4	151	60	211
	%	40.4	47.7	8.6	0.7	2.6	100.0	-	-

*Percentages are calculated based on the total number of classifiable sherds; indeterminate body sherds are excluded from percentage calculations.

Overall, the body sherd surface treatments recorded for the site are consistent with an Initial Middle Missouri occupation. However, most Grand Detour phase components show somewhat higher percentages of cord roughened sherds (62.1-73.0%) as opposed to lower percentages of plain/smoothed sherds (22.6-31.4%) (Caldwell and Jensen 1969:50). This difference could be (and probably is) the result of variability in the application of classification criteria rather than actual variability between Antelope Dreamer and the Grand Detour phase components.

Maximum thicknesses for a sample of G2 body sherds (cat. no. 622, n=35) from the floor of House 11 were also recorded. A mean value of 5.6±1.0 mm was computed for these specimens. This value is somewhat higher than the mean maximum thickness of 4.6±0.8 mm recorded for the Extended Coalescent component at the West Bend site (39HU83); it is considerably higher than the mean maximum thickness of 2.9±0.8 mm recorded for the Extended Coalescent component at the Buzzing Yucca site (39LM166).

Rim Sherds and Vessels

Rim sherds from the test excavations at Antelope Dreamer total 33 specimens, including 5 G1, 14 G2, and 14 G3 rims. After matching, the 33 rims were found to represent a total of 23 vessels. While the sample is small, it does contain an interesting variety of ceramic wares. The collection is dominated by various types of Cable ware (44.4%), followed by equal proportions of types of Grass Rope ware (27.8%) and Sanford ware (27.8%) (Table 24). Grass Rope and Cable ware are characteristic of ceramic assemblages from sites of the Grand Detour phase of the Initial Middle Missouri variant (Caldwell and Jensen 1969). Sanford ware, which is represented by a single type, a finger impressed variety of Kimball Modified Lip, is more commonly found to the south and east of the Lake Sharpe area in Initial Middle Missouri sites of the Over focus, the Lower James phase, and the Mill Creek culture (Alex 1981; Anderson 1981; Hurt 1951b; Ives 1962). Sanford ware is not recognized as a significant component of Grand Detour phase assemblages. However, Caldwell and Jensen (1969:44-45) do identify three Mitchell Rolled Rim types as minor elements of Grand Detour phase collections that are comparable to certain Sanford ware types. Generally speaking, Sanford ware is equatable with Anderson Flared Rim ware, as defined for certain Initial Middle Missouri sites in central South Dakota (Alex 1981:56-57; cf. Lehmer 1954). Anderson ware is subsumed under Cable ware as a number of different types in the Grand Detour phase ceramic scheme (Caldwell and Jensen 1969).

Summary data on the distribution of ceramic wares according to extramural and intramural contexts at Antelope Dreamer can be found in Table 25. Only one classifiable vessel, a Cable ware specimen from Test 2, was recovered from the extramural tests, so there is nothing to be said about variability in ceramic wares between extramural and intramural contexts. Some differences in ceramic ware distributions are apparent when the data from Houses 11 and 15 are compared, however. Grass Rope ware is represented in approximately equal proportions in both houses, but House 11 exhibits a higher percentage of Sanford ware as opposed to a higher percentage of Cable ware in House 15. These differences between the two houses may be more apparent than real, however, because of the small size of the samples and the limited extent of the excavations.

Table 24. Native Ceramic Wares and Types, Antelope Dreamer Site (39LM146).

Ware	Ware* n	Ware* %	Type	Type n	Type %
Grass Rope	5	27.8	Foreman Horizontal Cord Impressed	2	40.0
			Marken Horizontal Cord Impressed	1	20.0
			Undifferentiated Foreman/Marken Horizontal Cord Impressed	1	20.0
			Undifferentiated Foreman/Marken Horizontal Incised	1	20.0
Subtotal, Grass Rope Ware				5	100.0
Cable	8	44.4	Anderson Tool Impressed	1	12.5
			Anderson Plain	2	25.0
			Anderson Incised Crosshatch	4	50.0
			Chamberlain Horizontal Cord Impressed	1	12.5
Subtotal, Cable Ware				8	100.0
Sanford	5	27.8	Kimball Modified Lip	5	100.0
Indeterminate	5	0.0	Indeterminate	5	100.0
Total	23	100.0		23	100.0

*Ware percentages include classifiable rims/vessels only.

Table 25. Distribution of Native Ceramic Wares According to Extramural and Intramural Contexts, Antelope Dreamer Site (39LM146).

Ceramic Ware		Extramural Tests	House 11	House 15	Total
Grass Rope	n	-	3	2	5
	%	-	30.0	28.6	27.8
Cable	n	1	3	4	8
	%	100.0	30.0	57.1	44.4
Sanford	n	-	4	1	5
	%	-	40.0	14.3	27.8
Total	n	1	10	7	18
	%	100.0	100.0	100.0	100.0

Descriptions of the ceramic types identified in the Antelope Dreamer collection are presented in the following paragraphs. Selected examples are illustrated in Figures 38, 39, and 40.

Foreman Horizontal Cord Impressed. Vessels 9, 14; n=2; Figure 38A.

Ware: Grass Rope Type: Foreman S-Rim
Subtype: Foreman Cord Impressed
Variety: Foreman Horizontal Cord Impressed
Rim form: S-rim.
Exterior rim decoration: cord impressed.
Decoration motif: horizontal lines.
Lip decoration: undecorated.
Exterior rim surface treatment: indeterminate.
Lip form: unthickened, flattened.

Vessel numbers 9 and 14 are rim sherds from globular jars. They are classified as a variety of the basic Foreman S-Rim type. The variety Foreman Horizontal Cord Impressed is defined for the Grand Detour phase of the Initial Middle Missouri variant (Caldwell and Jensen 1969:39).

Figure 38. Photos of Native Ceramic Rim Sherds, Antelope Dreamer Site (39LM146). A: Foreman Horizontal Cord Impressed. B: Marken Horizontal Cord Impressed. C: Anderson Tool Impressed.

Marken Horizontal Cord Impressed. Vessel 11; n=1; Figure 38B.

Ware: Grass Rope Type: Marken S-Rim
Subtype: Marken Cord Impressed
Variety: Marken Horizontal Cord Impressed
Rim form: S-rim.
Exterior rim decoration: cord impressed.
Decoration motif: horizontal lines.
Lip decoration: undecorated.
Exterior rim surface treatment: indeterminate.
Lip form: unthickened, rounded.

Vessel number 11 is a rim sherd from a globular jar. It represents a single example of a variety of the basic Marken S-Rim type. The variety Marken Horizontal Cord Impressed is also defined for the Grand Detour phase (Caldwell and Jensen 1969:40). It is essentially similar to the Foreman S-Rim type discussed above, except that Marken rims have a more angular "S-shaped" profile which gives them a "collared" appearance.

Foreman/Marken Horizontal Cord Impressed. Vessel 20; n=1.

Ware: Grass Rope Type: Foreman/Marken S-Rim
Subtype: Foreman/Marken Cord Impressed
Variety: Foreman/Marken Horizontal Cord Impressed
Rim form: S-rim.
Exterior rim decoration: cord impressed.
Decoration motif: horizontal lines.
Lip decoration: indeterminate (lip missing, but likely undecorated).
Exterior rim surface treatment: indeterminate.
Lip form: unthickened, rounded?

Vessel number 20 cannot be be distinguished between the Foreman and Marken S-Rim types because the lower part of the rim is missing, leaving the degree of angularity of the rim in doubt. The specimen could represent either Foreman or Marken Horizontal Cord Impressed.

Foreman/Marken Horizontal Incised. Vessel 21; n=1.

Ware: Grass Rope Type: Foreman/Marken S-Rim
Subtype: Foreman/Marken Incised
Variety: Foreman/Marken Horizontal Incised
Rim form: S-rim.
Exterior rim decoration: incised/trailed.
Decoration motif: horizontal lines.
Lip decoration: undecorated.
Exterior rim surface treatment: indeterminate.
Lip form: unthickened, rounded.

Vessel number 21, like vessel 20, cannot be be distinguished between the Foreman and Marken S-Rim types because the lower part of the rim is missing, making the degree of angularity of the rim indefinite. It could represent either Foreman or Marken Horizontal Incised.

Figure 39. Photos of Native Ceramic Rim Sherds, Antelope Dreamer Site (39LM146). A: Anderson Plain. B-C: Anderson Incised Crosshatch. D: Chamberlain Horizontal Cord Impressed. E-G: Kimball Modified Lip (Finger Impressed).

Anderson Plain. Vessels 7, 19; n=2; Figure 39A.

Ware: Cable Type: Anderson Everted Rim
Subtype: Anderson Plain
Rim form: straight/curved.
Exterior rim decoration: undecorated.
Lip decoration: undecorated.
Decoration motif: not applicable.
Exterior rim surface treatment: plain/smoothed.
Lip form: unthickened, rounded.

Vessel numbers 7 and 19 are also rim sherds from globular vessels. They are classified as a subtype of the Anderson Everted Rim type. The subtype Anderson Plain is defined for the Grand Detour phase (Caldwell and Jensen 1969:42).

Anderson Tool Impressed. Vessel 6; n=1; Figures 38C, 40.

Ware: Cable Type: Anderson Everted Rim
Subtype: Anderson Tool Impressed
Rim form: straight/curved.
Exterior rim decoration: undecorated.
Lip decoration: tool impressed, lip and lip-rim margin.
Decoration motif: diagonal lines/slashes.
Exterior rim surface treatment: plain/smoothed.
Lip form: thickened, rounded.
Shoulder decoration: incised, stylized "eye" design; "diamond eye."

Vessel number 6 is a rim and shoulder section from a globular jar. It is classified here as a subtype of the Anderson Everted Rim type. The subtype Anderson Tool Impressed is defined for the Grand Detour phase (Caldwell and Jensen 1969:42). However, vessel 6 also compares favorably with Anderson Low Rim and the Sanford Incised Shoulder/Mitchell Modified Lip types. Anderson Low Rim is a type of Anderson Flared Rim ware defined for Initial Middle Missouri components in the vicinity of Oahe Dam (Lehmer 1954:49). Sanford Incised Shoulder is a type of Sanford ware that is more commonly found in Initial Middle Missouri components of the Over focus and the Mill Creek culture (Ives 1962:13-14). The type Sanford Incised Shoulder is now considered obsolete and has been subsumed under the Mitchell Modified Lip type (cf. Alex 1981; Anderson 1981:95).

The stylized "eye" design incised on the reconstructed shoulder section of vessel 6 (Figure 40) is unusual and shows some connection between the Antelope Dreamer village and other Initial Middle Missouri components to the southeast in the lower James River valley (Lower James phase, formerly part of the Over focus). Alex (1981) reports this same shoulder decoration motif, which he terms the "diamond eye," at Lower James phase sites in southeastern South Dakota, especially in the Mitchell village collection. He also notes that the diamond eye is sometimes found in combination with the "forked" or "weeping eye" at Mitchell (Alex 1981:70). One can speculate that the diamond eye may reveal some sort of distant Caddo connection from the southern Plains because it is often associated with human figures or isolated forked eyes on

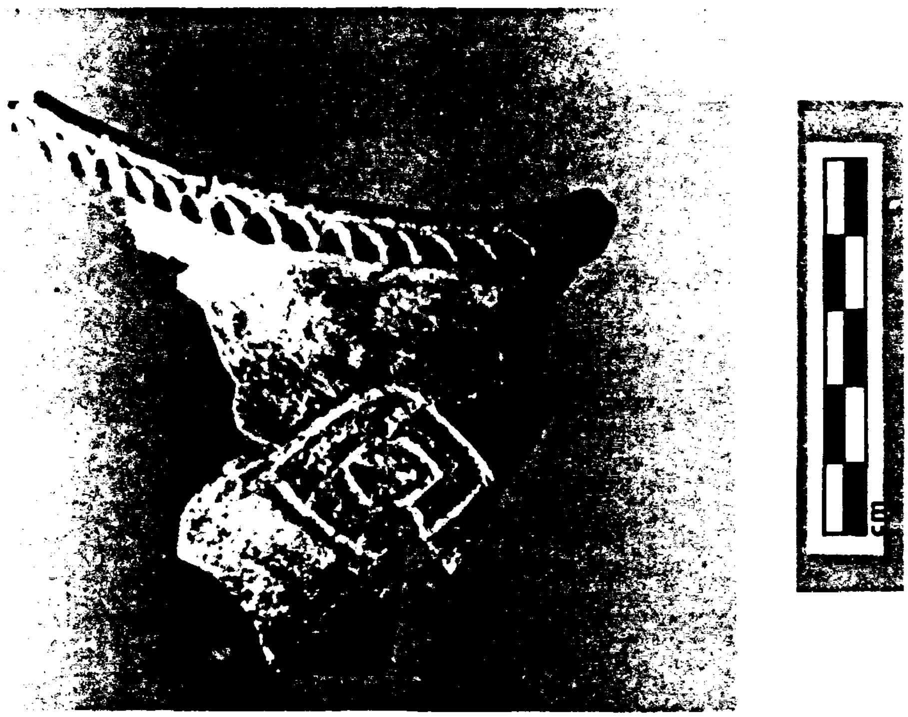


Figure 40. Anderson Tool Impressed Rim and Partially Reconstructed Shoulder with "Diamond Eye" Design (vessel 6, also illustrated in Figure 38C). The specimen here has been coated with powdered aluminum to better show the design incised on the shoulder.

engraved shells and pottery vessels from the Spiro site in Oklahoma (cf. Duffield 1964; after Alex 1981:70). The forked or weeping eye motif is ultimately traceable to the so-called Southern Cult and the Mississippian tradition (Willey 1966:304-306). One of the forked eye motifs illustrated by Willey actually exhibits a diamond eye design.

Regionally, the diamond eye motif seems to peak in popularity in the Lower James phase sites (R. A. Alex, personal communication 1988). It is not commonly found farther to the east in Mill Creek assemblages. Ives (1962:46, Fig. 4B) illustrates a rim classified as Sanford Hatchured Shoulder, a subtype of Sanford Incised Shoulder, that may exhibit a diamond eye motif. However, no mention of this motif could be found in Anderson's (1981) discussion of Mill Creek ceramics from the Brewster site. On the basis of this information, it can be tentatively concluded that the diamond eye motif is more or less specific to the Lower James phase of the Initial Middle Missouri variant.

Vessel 6 is also out of character with the other ceramic materials in the Antelope Dreamer sample. Vessel 6 was a relatively small jar of exceptional quality with an unusually thin shoulder (thickness of 1.9-4.8 mm). Other ceramics from the site, while relatively well made, do not show the same degree of craftsmanship that is expressed in vessel 6. This brings up the possibility that vessel 6 was a nonutilitarian, special purpose vessel, perhaps used for ceremonial activities, or it may have been a trade vessel obtained from a source outside the Lake Sharpe area. In view of the diamond eye motif on the vessel, a point of origin in the Lower James phase, possibly even the Mitchell site itself, seems plausible.

Anderson Incised Crosshatch. Vessels 3, 16, 17, 18; n=4; Figure 39B-C.

Ware: Cable Type: Anderson Everted Rim
Subtype: Anderson Incised
Variety: Anderson Incised Crosshatch
Rim form: straight/curved.
Exterior rim decoration: undecorated.
Lip decoration: incised or tool impressed; a row of punctates may be present on the lip-rim margin (vessels 16 and 17).
Decoration motif: crosshatch pattern.
Exterior rim surface treatment: plain/smoothed or indeterminate.
Lip form: thickened, beveled; unthickened, beveled.

Vessel numbers 3, 16, 17, and 18 are rim sherds from globular jars that have been classified as a variety of the Anderson Everted Rim type. The variety Anderson Incised Crosshatch is defined for the Grand Detour phase (Caldwell and Jensen 1969:42).

Chamberlain Horizontal Cord Impressed. Vessel 1; n=1; Figure 39D.

Ware: Cable Type: Chamberlain Everted Rim
Subtype: Chamberlain Cord Impressed
Variety: Chamberlain Horizontal Cord Impressed
Rim form: straight/curved.
Exterior rim decoration: cord impressed.
Decoration motif: horizontal lines.
Lip decoration: undecorated.
Exterior rim surface treatment: indeterminate.
Lip form: unthickened, flattened.

Vessel number 1 is a rim sherd from a globular jar that is classified as a variety of the Chamberlain Everted Rim type. The variety Chamberlain Horizontal Cord Impressed is a component of Grand Detour phase ceramic assemblages (Caldwell and Jensen 1969:43).

Kimball Modified Lip. Vessels 8, 10, 15, 22, 23; n=5; Figure 39E-G.

Ware: Sanford Type: Kimball Modified Lip (finger impressed)
Rim form: straight/curved.
Exterior rim decoration: undecorated.
Lip decoration: finger impressed, lip-rim margin.
Decoration motif: not applicable.
Exterior rim surface treatment: plain/smoothed or indeterminate.
Lip form: thickened, beveled; unthickened, rounded; unthickened, beveled.

Vessel numbers 8, 10, 15, 22, and 23 are rim sherds from globular jars. All are assigned to the type Kimball Modified Lip. Kimball Modified Lip, including both finger impressed and tool impressed varieties, is defined as a subtype of the Capitol Flared-Rim type in the Swanson site assemblage (Hurt 1951b:49). The Swanson site (39BR16), located to the south of Antelope Dreamer on Lake Francis Case (Missouri River) a few miles above Chamberlain,

is assigned to the Over focus of the Initial Middle Missouri variant (Hurt 1951b:15-16; Lehmer 1971:97). The Over focus is an ill defined unit that essentially includes all Initial Middle Missouri components in the southern portion of the Big Bend region (downstream from the Lake Sharpe area), as well as those in southeastern South Dakota beyond the Missouri proper. Close relationships between the Over focus and the Mill Creek culture centered in northwestern Iowa have been proposed by a number of investigators (cf. Alex 1981; Tiffany 1983). The Lower James phase, discussed previously, was once a part of the Over focus.

Ives (1962:14) later redefined Kimball Modified Lip as a type of Sanford ware in his analysis of Mill Creek pottery. His definition of Kimball Modified Lip also includes finger and tool impressed varieties. This usage has persisted today in analyses of Over focus and Mill Creek sites (e.g., Alex 1981; Anderson 1981). All of the specimens from Antelope Dreamer exhibit finger impressed decoration. Tool impressed specimens would be classified as Anderson Tool Impressed under the Grand Detour ceramic scheme. This realization is somewhat disquieting considering the emphasis placed on ceramic types in the interpretation of regional culture history and cultural interaction during the late prehistoric period.

Ceramic types comparable to the finger impressed variety of Kimball Modified Lip are not identified in Grand Detour phase assemblages (cf. Caldwell and Jensen 1969). While Sanford ware types are generally similar to the Anderson types defined for the Grand Detour phase, a finger impressed Anderson type has not been previously identified. Consequently, the presence of finger impressed Anderson-like vessels in the Antelope Dreamer collection necessitates their classification as Kimball Modified Lip. That is, of course, unless one wishes to define a new Anderson finger impressed type, which this author has no intention of doing. It is the injudicious proliferation of ceramic types in the Middle Missouri region that has resulted in this rather confusing and certainly ambiguous situation in the first place.

In view of the foregoing discussion, it is difficult to know what significance to attach to the presence of finger impressed Kimball Modified Lip vessels in the Antelope Dreamer sample, which appears to be a unique occurrence among Initial Middle Missouri components in the Grand Detour phase locality. There is the implication of some sort of connection between the occupants of Antelope Dreamer and the sites of what might be thought of as the southeastern branch of the Initial Middle Missouri variant, including the Over focus, the Lower James phase, and the Mill Creek culture. The suggestion of such a connection for the Grand Detour phase is not unique, however. The presence of other ceramic types in Grand Detour phase assemblages, such as Stuart Collared and Mitchell Rolled Rim (Caldwell and Jensen 1969:43-45), also indicates long recognized ties to the southeastern Initial Middle Missouri sites.

Indeterminate. Vessel numbers 2, 4, 5, 12, and 13 (n=5) are too fragmentary to allow any sort of reasonable attempt at classification. They consist of small lip fragments and rim fragments lacking a lip.

Stone Tools

Stone tools recovered from the test excavations at Antelope Dreamer total 101 specimens. Descriptive categories represented in the sample include patterned notched bifaces (n=3), patterned biface fragments (n=8), unpatterned bifaces and nonbipolar cores and core-tools (n=9), end scrapers (n=6), other retouched and modified flakes (n=46), bipolar cores/tools (n=6), unpatterned pecked/ground tools (n=21), linearly grooved tools (n=1), and patterned complex ground stone tools (n=1). Eighty-two tools are single function implements, 18 are double function, and one is triple function, resulting in a total of 121 functional tool occurrences. All but four specimens (representing 6 functional occurrences) are from the Initial Middle Missouri occupation zone. The four specimens not from this zone are from ephemeral contexts. All of the tools are thought to relate to the Initial Middle Missouri village occupation, and each is considered accordingly here. No tools were recovered from contexts assigned to the unknown/indeterminate component.

Tool Technology

Technological classification of the Antelope Dreamer tools is summarized according to test unit and archeological context in Table 26. All 10 technological classes are represented in the assemblage. The majority of the tools are unpatterned forms, including unpatterned flake tools (49.6%) and unpatterned pecked/ground stone tools (22.3%). Nearly all of the tools (n=109, 90.1%) were recovered from the excavations into House 11 and 15; very few (n=12, 9.9%) are from the extramural tests.

Technology and Lithic Raw Materials

Lithic raw material type frequency data by technological class for the Antelope Dreamer assemblage are contained in Table 27. Seventeen different raw material types are represented. Most of the tools are made of locally available raw materials (n=84, 69.4%). Of all the local raw material types in the sample, porous quartzite, which is also referred to as Swan River chert, was used the most frequently in the manufacture of chipped stone tools. Various locally available granitic stones were used most often to manufacture ground stone tools. Various types of nonlocal materials from the northern, western, and southern resource groups make up the balance of the sample (n=33, 27.3%), with the exception of a few specimens assigned to types of the miscellaneous resource group (n=4, 3.3%). The nonlocal materials are clearly dominated by Knife River flint (KRF), followed by lesser quantities of Bijou Hills silicified sediment, Flattop chalcedony, and smooth gray Tongue River silicified sediment.

Both nonlocal and locally available raw materials were used to manufacture patterned and unpatterned chipped stone tools. No clear preference for selecting nonlocal materials for patterned chipped stone tools is apparent in the data, as is commonly seen in other assemblages (cf. Ahler 1977a; Johnson 1984a). It is possible that the Antelope Dreamer assemblage is too small to reveal such a pattern of lithic resource utilization if it was in

Table 26. Stone Tool Technological Class Data by Extramural and Intramural Contexts, Antelope Dreamer Site (39LM146).

Technological Class		Extramural			House 11	House 15	
		Test 1	Test 2	Test 4	Tests 5-8	Tests 3&9	Total
1 Small Thin Patterned Bifaces	n	-	-	-	3	3	6
	%	-	-	-	3.6	12.0	5.0
2 Large Thin Patterned Bifaces	n	-	-	-	5	1	6
	%	-	-	-	6.0	4.0	5.0
3 Irregular Unpatterned Bifaces	n	-	-	-	7	-	7
	%	-	-	-	8.3	-	5.8
4 Patterned Flake Tools	n	1	1	-	4	-	6
	%	33.3	11.1	-	4.8	-	5.0
5 Unpatterned Flake Tools	n	2	8	-	40	10	60
	%	66.7	88.9	-	47.6	40.0	49.6
6 Thick Bifacial Core-Tools	n	-	-	-	1	-	1
	%	-	-	-	1.2	-	0.8
7 Nonbipolar Cores-Tools	n	-	-	-	1	-	1
	%	-	-	-	1.2	-	0.8
8 Bipolar Core-Tools	n	-	-	-	4	2	6
	%	-	-	-	4.8	8.0	5.0
9 Unpatterned Pecked/Ground Stone Tools	n	-	-	-	18	9	27
	%	-	-	-	21.4	36.0	22.3
10 Patterned Pecked/Ground Stone Tools	n	-	-	-	1	-	1
	%	-	-	-	1.2	-	0.8
Total	n	3	9	-	84	25	121
	%	100.0	100.0	-	100.1	100.0	100.1

Table 27. Stone Tool Raw Material Type Data by Technological Class, Antelope Dreamer Site (39LM146).

Resource Group/ Raw Material	Technological Class 1	2	3	4	5	6	7	8	9	10	Total n	%
Local Resource Group												
04 Solid Quartzite	1	–	–	–	5	–	–	–	–	–	6	5.0
05 Porous Quartzite	–	2	4	2	17	–	1	1	–	–	27	22.3
06 Jasper/Chert	1	–	–	–	7	–	–	1	–	–	9	7.4
08 Clear/Gray Chalcedony	3	1	–	–	2	–	–	3	–	–	9	7.4
10 Dark Brown Chalcedony	–	1	–	–	–	–	–	–	–	–	1	0.8
13 Basaltic	–	–	–	–	–	1	–	–	2	–	3	2.5
16 Quartz	–	–	–	–	1	–	–	1	–	–	2	1.7
19 Granitic	–	–	–	–	–	–	–	–	17	1	18	14.9
21 Compact Sandstone	–	–	–	–	–	–	–	–	1	–	1	0.8
23 Natural Clinker	–	–	–	–	–	–	–	–	6	–	6	5.0
35 Other Quartzite	–	–	–	–	2	–	–	–	–	–	2	1.7
Subtotal, Local	5	4	4	2	34	1	1	6	26	1	84	69.4
Northern Resource Group												
01 Smooth Gray TRSS	–	–	–	–	1	–	–	–	–	–	1	0.8
28 Knife River Flint	–	1	2	3	15	–	–	–	–	–	21	17.4

Table 27. Stone Tool Raw Material Type Data by Technological Class, Antelope Dreamer Site (39LM146) (Continued).

Resource Group/		Technological Class										Total	
Raw Material		1	2	3	4	5	6	7	8	9	10	n	%
Western Resource Group													
07 Flattop Chalcedony		-	-	-	1	2	-	-	-	-	-	3	2.5
Southern Resource Group													
15 Bijou Hills SS		-	-	-	-	8	-	-	-	-	-	8	6.6
Subtotal, Nonlocal		-	1	2	4	26	-	-	-	-	-	33	27.3
Misc. Resource Group													
12 Burnt Chalcedony		1	1	1	-	-	-	-	-	-	-	3	2.5
20 Porous Sandstone		-	-	-	-	-	-	-	-	1	-	1	0.8
Total	n	6	6	7	6	60	1	1	6	27	1	121	100.0
	%	5.0	5.0	5.8	5.0	49.6	0.8	0.8	5.0	22.3	0.8	100.1	

fact practiced by the occupants of the Antelope Dreamer village. Overall, the lithic resource utilization pattern at Antelope Dreamer is typical of other Initial Middle Missouri assemblages in the Lake Sharpe area (cf. Johnson 1984a).

Function and Use Phase

Data on the functional classification of the stone tools from Antelope Dreamer according to use-phase class are presented in Table 28 The tool sample from the site shows a wide range of functions, as one would expect of a permanent residential base. Twenty-two specific functional classes assigned to 12 of the 16 general functional groups are represented. The specific functions of two tools could not be determined; they are assigned to the unknown/indeterminate group. No specific functional classes of the edge ground flake, large corner ground tool, non-utilitarian, and post-contact functional groups were recorded. These groups contain tools of a specialized

Table 28. Stone Tool Functional Class Data by Use-Phase Class, Antelope Dreamer Site (39LM146).

General Functional Group/ Specific Functional Class	Use-Phase Class 1	2	3	4	Total
0. Unknown/Indeterminate					
00 Specific function unknown	-	-	-	2	2
1. Projectile Points					
01 Projectile point	-	2	1	2	5
2. Patterned Bifacial Cutting Tools					
03 Light duty bilateral cutting tool	-	-	-	1	1
07 Bilateral, heavy duty 1 bifacial cutting tool	-	-	-	2	2
12 Bifacial cutting tool used on hard material	-	-	1	2	3
15 Generalized patterned bifacial cutting tool	-	-	-	4	4
Subtotal	-	-	(1)	(9)	(10)
3. Patterned or Heavy Duty Scraping Tools					
06 Light duty transverse scraper used on soft material	-	-	1	3	4
17 Transverse scraper used on hard material	-	-	1	3	4
20 Generalized transverse scraping tool	-	-	-	2	2
Subtotal	-	-	(2)	(8)	(10)
4. Jagged Expedient Cutting Tools					
08 Expedient general purpose cutting tool	-	-	1	3	4
18 Denticulated flake tool	-	-	-	1	1
Subtotal	-	-	(1)	(4)	(5)
5. Prepared or Regularly Modified Unpatterned Flake Tools					
23 Retouched or utilized flake used on variable material	-	-	6	16	22
6. Unprepared or Irregularly Modified Unpatterned Flake Tools					
22 Utilized flake used to saw or slice hard material	-	-	11	21	32
7. Edge Ground Flake Tools	-	-	-	-	-

Table 28. Stone Tool Functional Class Data by Use-Phase Class, Antelope Dreamer Site (39LM146) (Continued).

General Functional Group/ Specific Functional Class		Use-Phase Class 1	2	3	4	Total
8. Pointed Tools						
19 Slotting/grooving tool (beak)		-	-	-	1	1
9. General Core-Tool Group						
14 Heavy duty chopping/pounding tool		-	-	1	-	1
10. Cores and Potential Cores						
21 Core		-	-	2	4	6
11. Large Corner Ground Tools		-	-	-	-	-
12. Bipolar Tools or Potential Tools						
25 Core/punch/wedge/chisel		-	-	1	-	1
13. Grinding Tools						
33 Simple hand-held abrading tool		-	-	2	1	3
34 Simple hand-held grooved abrading tool		-	-	3	-	3
35 Complex hand-held grinding/ crushing tool (mano)		-	-	3	2	5
36 Complex anvil used in grinding/ crushing (metate/mortar)		-	-	1	4	5
Subtotal		-	-	(9)	(7)	(16)
14. Hammerstone/Anvils						
28 Bipolar hammer or anvil		-	-	3	-	3
29 Hammerstone or pounder		-	-	7	-	7
Subtotal		-	-	(10)	-	(10)
15. Non-Utilitarian Group		-	-	-	-	-
16. Post-Contact Group		-	-	-	-	-
Total	n	-	2	45	74	121
	%	-	1.6	37.2	61.2	100.0

nature that do not ordinarily make up a high percentage of the functional occurrences within a particular village sample (cf. Ahler and Swenson 1985). Obviously, the post-contact group is found only in assemblages of the post-contact period. Each functional group represented in the Antelope Dreamer tool sample is discussed in detail below. Selected tools are illustrated by functional class in Figures 41-46.

Unknown/Indeterminate. Two tool fragments are assigned to this general functional group. One is a very small fragment of an unpatterned ground stone tool form whose specific function within the grinding tools group could not be determined because of its extremely small size. The other is a small fragment of what appears to have been a patterned ground stone tool, also of an indeterminate specific function. It may be a fragment from an adze or hafted hammerstone, or perhaps even a piece of a nonutilitarian ground stone object. Both specimens are assigned to use-phase class 4 (finished, broken).

Projectile Points (Figure 41A-C). Five specimens are classified as projectile points (class 01). All represent small, thin, patterned bifaces that were used as arrow points. One arrow point also exhibits evidence of use as a bifacial cutting tool (class 07) (Figure 41C). Use-phase classification indicates two arrow points were broken during manufacture (use-phase 2), one was fully functional (use-phase 3), and two were finished and broken during use (use-phase 4).

Three specimens are side-notched arrow point forms; the other two are biface fragments of undetermined arrow point morphology. Only two specimens are complete enough to give an indication of their specific form (Figure 41A-B). Both are side-notched arrow points of the general Plains Side-Notched type (Kehoe 1966, 1973). These arrow point forms are commonly found in Initial Middle Missouri assemblages (cf. Lehmer 1971:73). The following measurements were recorded for the two more or less complete specimens. Some measurements had to be estimated due to fracture and missing parts.

Comp. No.: 030002 (Figure 41A)
Weight: 1.5 g
Max. Length: 31.0 mm (estimate)
Max. Thickness: 4.6 mm
Max. Blade Width: 16.3 mm (est.)
Max. Base Width: 16.3 mm (est.)
Distance to Center of Notches from Base: 5.0 mm (est.)

Comp. No.: 030003 (Figure 41B)
Weight: 1.0 g
Max. Length: 24.5 mm
Maximum Thickness: 3.4 mm
Max. Blade Width: 13.8 mm
Max. Base Width: 14.2 mm (est.)
Distance to Center of Notches from Base: 5.6 mm

Patterned Bifacial Cutting Tools (Figure 41C-E, 42E). Four functional classes of this group are represented in the Antelope Dreamer sample. Included here are one light duty bilateral cutting tool (class 03), two bilateral heavy duty 1 bifacial cutting tools (class 07), three bifacial cutting tools used on hard materials (class 12), and four generalized bifacial cutting tools (class 15). All are fragments of finished tools that were broken during use (use-phase 4), with the exception of one complete, unbroken (use-phase 3) specimen of functional class 12. As was mentioned previously, one of the functional class 07 specimens was observed on an arrow point form (Figure 41C), which is an unusual functional combination.

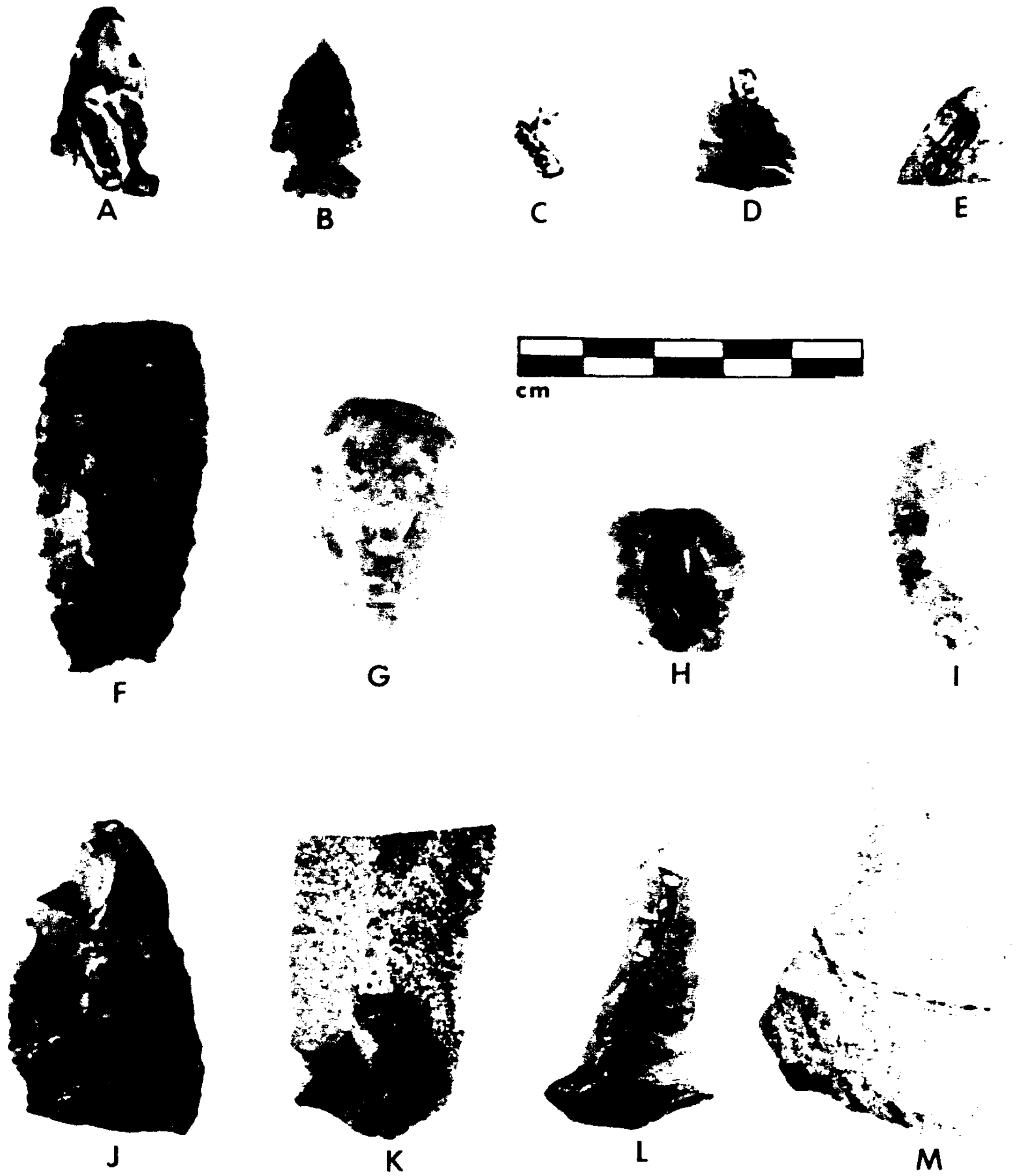


Figure 41. Photos of Chipped Stone Tools, Antelope Dreamer Site (39LM146).

A-B: Projectile (arrow) points (class 01). C: Combination projectile (arrow) point (class 01) and bilateral heavy duty 1 bifacial cutting tool (class 07). D: Light duty bilateral cutting tool (class 03). E: Bilateral heavy duty 1 bifacial cutting tool (class 07). F&H: Transverse scrapers used on hard material (class 17). G: Light duty transverse scraper used on soft material (class 06). I: Retouched or utilized flake used on variable material (class 23). J: Combination slotting/grooving tool (beak) (class 19), utilized flake used to saw or slice hard material (class 22), and retouched or utilized flake used on variable material (class 23). K-M: Utilized flakes used to saw or slice hard material (class 22)

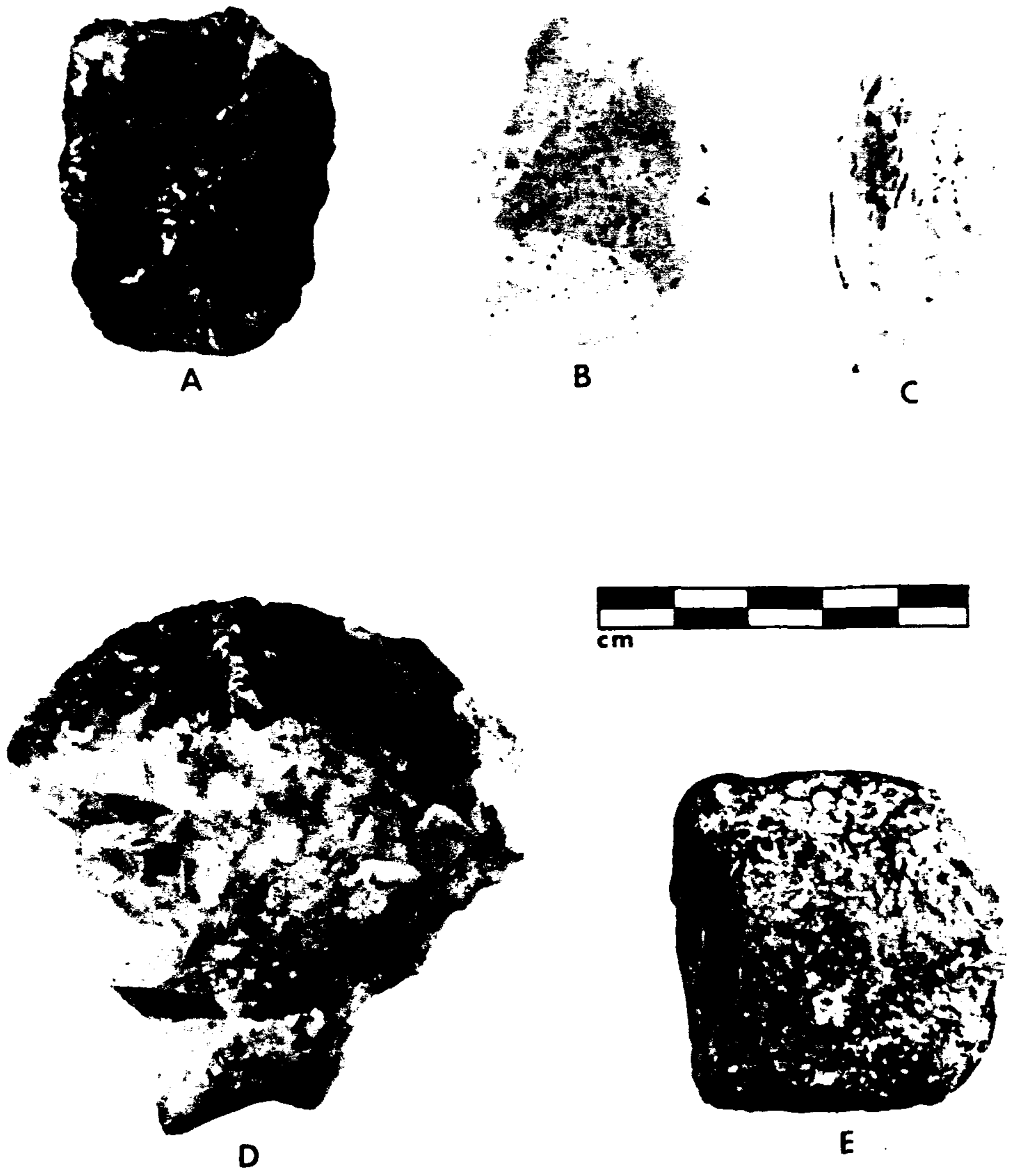


Figure 42. Photos of Chipped Stone Tools, Antelope Dreamer Site (39LM146). A: Bipolar core/punch/wedge/chisel (class 25). B-C: Bipolar cores (class 21). D: Expedient general purpose cutting tool (class 08). E: Bifacial cutting tool used on hard material (class 12).

Light duty and heavy duty 1 bilateral cutting tools were used to cut soft materials for varying lengths of time (Ahler and Swenson 1985:329-300). They were probably used to process meat, hides, and other such materials. This was also the most likely use made of the generalized cutting tools, which are too fragmentary for a more specific functional assessment. The bifacial tools used on hard materials were probably used to saw bone or wood (Ahler and Swenson 1985:331).

Patterned Scraping Tools (Figure 41F-H). The 10 tools assigned to this group are attributable to two specific functional classes and one generalized functional class. Six specimens are of the typical transverse end scraper form, while four are recorded on unpatterned flake tool forms. Functional classes include four light duty transverse scrapers used on soft material (class 06), four transverse scrapers used on hard material (class 17), and two generalized transverse scraping tools. The generalized functional class includes broken end scraper forms (use-phase 4) that lack transverse working elements and cannot be more specifically classified (Ahler and Swenson 1985:333). Use-phase classification reveals two finished, fully functional scrapers (use-phase 3) and eight finished scrapers that were broken during use (use-phase 4).

Light duty transverse scrapers used on soft material were used to "scrape fresh (wet) and pliable hides" (Ahler and Swenson 1985:330). Conversely, transverse scrapers used on hard materials were used to scrape such materials as bone and wood (Ahler and Swenson 1985:332). The scraping tool functions represented in the Antelope Dreamer sample indicate that both green hide preparation and the manufacture of bone and wood tools were among the tasks performed at the site. Noticeably absent is another transverse scraper functional class — scrapers used on abrasive materials (class 16). These were used to "work abrasive materials, possibly minerals, into hides or to knead dry, partially tanned hides during the later stages of preparation" (Ahler and Swenson 1985:332). The lack of evidence for the secondary processing of hides with class 16 transverse scraping tools is likely a reflection of sample bias.

Jagged Expedient Cutting Tools (Figure 42D). Two specific functional classes are included under this group in the Antelope Dreamer tool sample. Unpatterned bifacial implements used for various expedient, general purpose cutting tasks (class 08) account for most tools in this group (n=4). The only other tool in this group is a denticulated flake tool (class 18). Use-phase analysis resulted in the classification of one bifacial tool as complete and usable (use-phase 3), with the four other tools classified as broken during use (use-phase 4).

The bifacial tools of this group are inferred to have been "used for a variety of cutting or shredding tasks, although some tools with pointed distal ends may have been used in piercing functions" (Ahler and Swenson 1985:330). Denticulated flake tools "were probably used most often in sawing, shredding, and scraping tasks involving hard materials such as wood or bone" (Ahler and Swenson 1985:332).

Prepared or Regularly Modified Unpatterned Flake Tools (Figure 41I-J). This group accounts for the second highest number of functional tool occurrences in the Antelope Dreamer assemblage (n=22, 18.2%). All are assigned to one functional class — retouched or utilized flakes used on variable material (class 23). Use phase analysis indicates six of these tools are complete and usable implements (use-phase 3) and 16 are broken (use-phase 4). However, several of the broken specimens are still large enough to have been potentially usable.

According to Ahler and Swenson (1985:334), such tools "are hypothesized to have served in a variety of cutting, slicing, sawing, and scraping operations involving an equal variety of worked materials." Worked materials could have included soft plant tissues, meat, hide, bone, and wood (Ahler and Swenson 1985:156). Clearly, expedient, general purpose tools of this type are among the most frequently used implements in the Antelope Dreamer assemblage. This indicates that such tools were potentially used to process a wide variety of materials at the site using a broad array of specific techniques.

Unprepared or Irregularly Modified Unpatterned Flake Tools (Figure 41J-M). This general functional group is similar to the one discussed immediately above, except that the only modification of these implements comes from use (i.e., no intentional edge retouching or other preparation is apparent). The use-wear attributes of these tools allows a more specific functional interpretation. Included here are tools exhibiting only irregular use-modification in the form of edge attrition (i.e., irregular edge flaking). Such implements are assigned to functional class 22, and "were used to saw or cut relatively hard materials such as wood and bone . . . for relatively short periods of time (Ahler and Swenson 1985:333). Thirty-two of these tools are present in the Antelope Dreamer sample, comprising the most numerous individual functional class (26.4%). Use phase analysis indicates 11 of these tools are complete and usable implements (use-phase 3), while the other 21 are broken (use-phase 4). However, several of the broken specimens are still large enough to have been potentially usable.

Pointed Tools (Figure 41J). This functional group consists of unpatterned flake tools and certain other patterned tool forms that exhibit pointed working elements used to perforate, striate, or groove a work material. Ordinarily, this group contains perforators with small, delicate, pointed working elements, some of which are manufactured on arrow point forms; boring tools (drills); slotting tools or beaks; and graving or incising tools (cf. Ahler and Swenson 1985:157). The only pointed tool in the Antelope Dreamer assemblage is a slotting/grooving tool often referred to as a "beak" (class 19). These implements were likely used to cut linear grooves or slots in wood or bone during the manufacture of other tools from such materials (Ahler and Swenson 1985:333). The specimen from Antelope Dreamer was manufactured on an unpatterned flake tool that also exhibits evidence of use as a utilized flake (class 22) and a retouched flake (class 23). This particular implement is the only triple function tool in the Antelope Dreamer sample (Figure 41J). Use-phase analysis places it in the finished, broken class (use-phase 4). However, the specimen is large enough that it may still have been potentially functional.

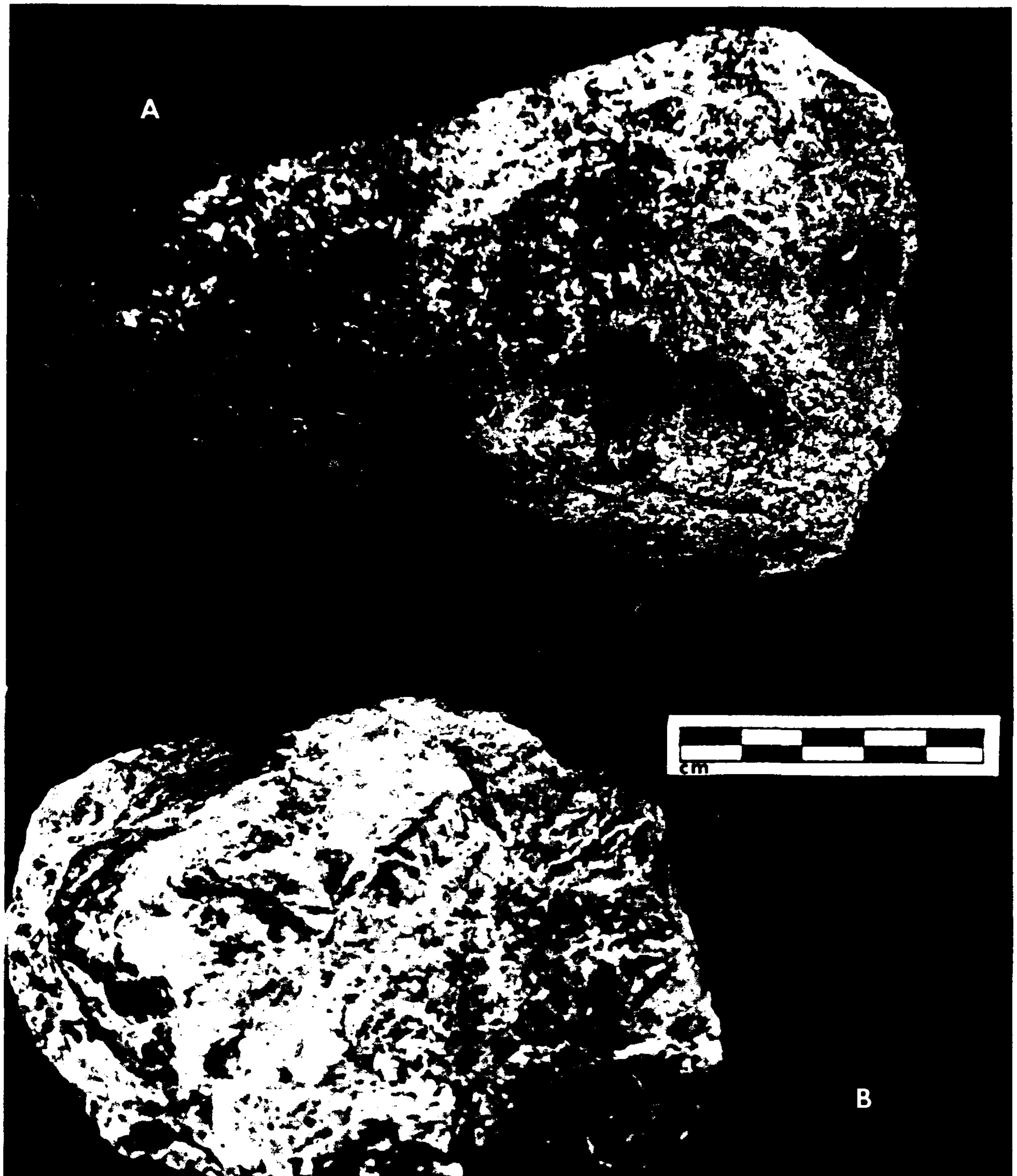


Figure 43. Photos of Chipped Stone Tools, Antelope Dreamer Site (39LM146). A: Heavy duty chopping/pounding tool (class 14). B: Freehand core (class 21).

General Core-Tool Group (Figure 43A). Only one large core-tool was collected at Antelope Dreamer. It is a heavy duty chopping/pounding tool (class 14) manufactured on a large, tabular piece of basaltic stone. The specimen is complete and fully functional (use-phase 3). Heavy duty chopping/pounding tools were likely used in "heavy butchering operations or in other heavy duty animal or plant product processing tasks" (Ahler and Swenson 1985:332).

Cores and Potential Cores (Figure 42B-C, 43B). Six stone tools from Antelope Dreamer were used as cores (class 21) to produce raw materials for other tools. Two specimens are considered to be still usable (use-phase 3) and four are core fragments or the nuclei of exhausted cores (use-phase 4). One specimen is of the freehand technology type (Figure 43B); the other five are bipolar cores (Figure 42B-C). There is no indication that any of these cores were multipurpose implements.

Bipolar Tools or Potential Tools (Figure 42A). Only one stone tool in the Antelope Dreamer sample, other than the five cores identified above, was manufactured using bipolar techniques. It is assigned to the core/punch/wedge/chisel functional class (class 25). Ahler and Swenson (1985:334) described this class as "either exhausted bipolar core nuclei or intermediary tools used as punches, wedges, or chisels in wood or bone working endeavors; wear and morphology characteristics are sufficiently indistinct to preclude more specific functional classification." The specimen from Antelope Dreamer is complete and usable (use-phase 3).

Grinding Tools (Figure 44A, 44D-E, 45, 46). The grinding tool group contains the third highest number of functional occurrences of all tool groups in the Antelope Dreamer sample (n=16, 13.2%). Only tools in the two unpatterned flake tool groups are more numerous. The relatively large number of such tools in the sample indicates that grinding tasks were performed with some frequency at the site, including those associated with tool manufacture and maintenance as well as plant food processing.

The ground stone tools in this group are assigned to four specific functional classes, including: simple hand-held abrading tools (class 33, n=3); simple hand-held grooved abrading tools (class 34, n=3); complex hand-held grinding/crushing tools (manos) (class 35, n=5); and complex anvils used in grinding/crushing (metates/mortars) (class 36, n=5). Nine of these implements are complete and usable (use-phase 3); the other seven are broken (use-phase 4). Several of the hand-held implements are multifunctional. Two specimens exhibit evidence of combined use as ungrooved and grooved, hand-held abrading tools (classes 33 and 34) (Figure 44D). Two of the complex hand-held grinding/crushing tools were also used as hammerstone/anvils, including one as a bipolar hammer or anvil (class 28) (Figure 45A) and one as a hammerstone or pounder (class 29) (Figure 44A). The hammerstone/anvil functional group is discussed below.

A restricted range of lithic raw materials was used in the manufacture of these tools. All of the simple hand-held abrading tools (classes 33 and 34) are made of natural clinker, a relatively soft yet highly abrasive stone that is excellent for abrading other tool materials such as wood and bone. The

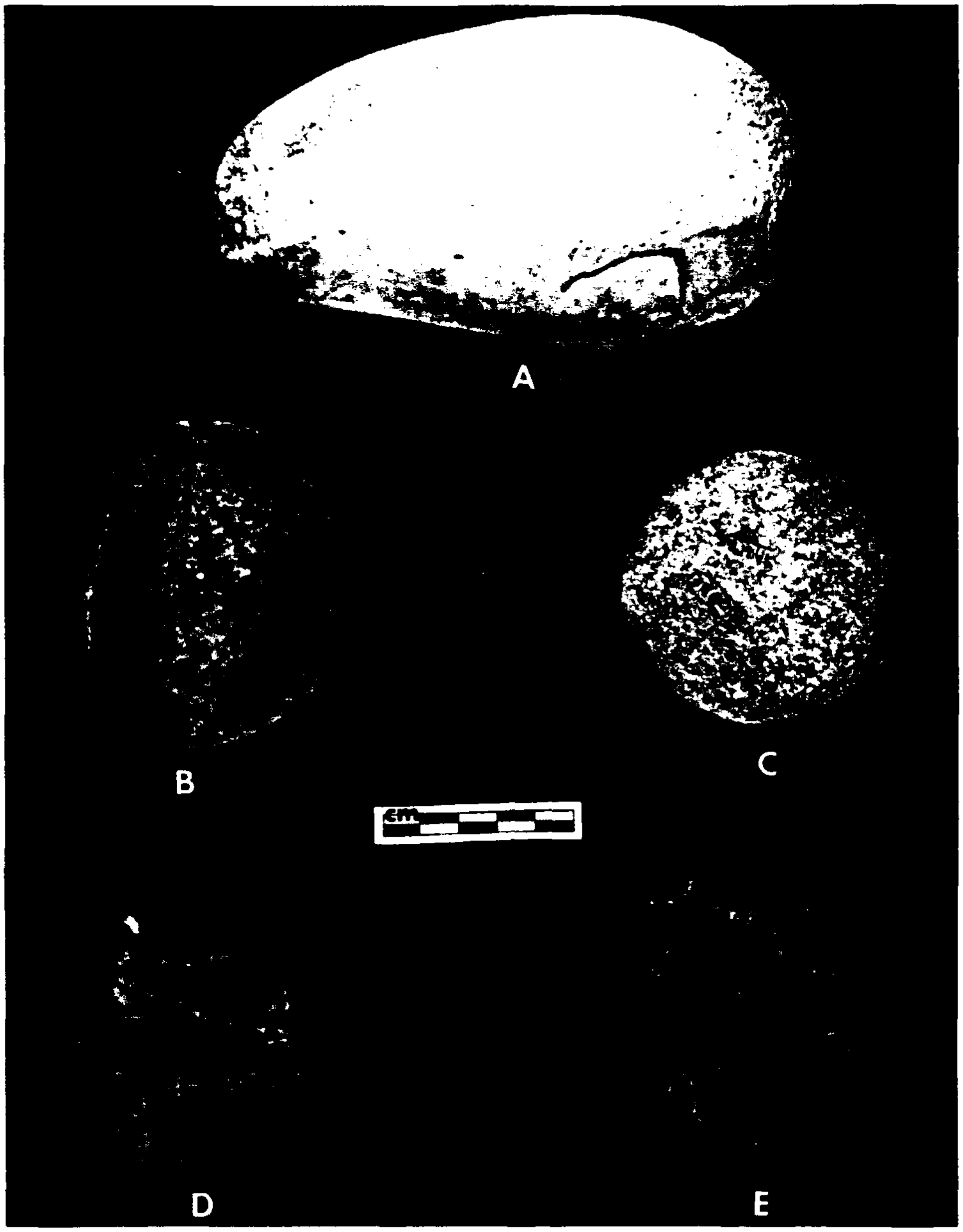


Figure 44. Photos of Ground Stone Tools, Antelope Dreamer Site (39LM146).
A: Combination complex hand-held grinding/crushing tool (mano) (class 35) and hammerstone or pounder (class 29). B: Combination bipolar hammer or anvil (class 28) and hammerstone or pounder (class 29). C: Hammerstone or pounder (class 29). D: Combination simple hand-held abrading tool (class 33) and simple hand-held grooved abrading tool (class 34). E: Simple hand-held grooved abrading tool (class 34).

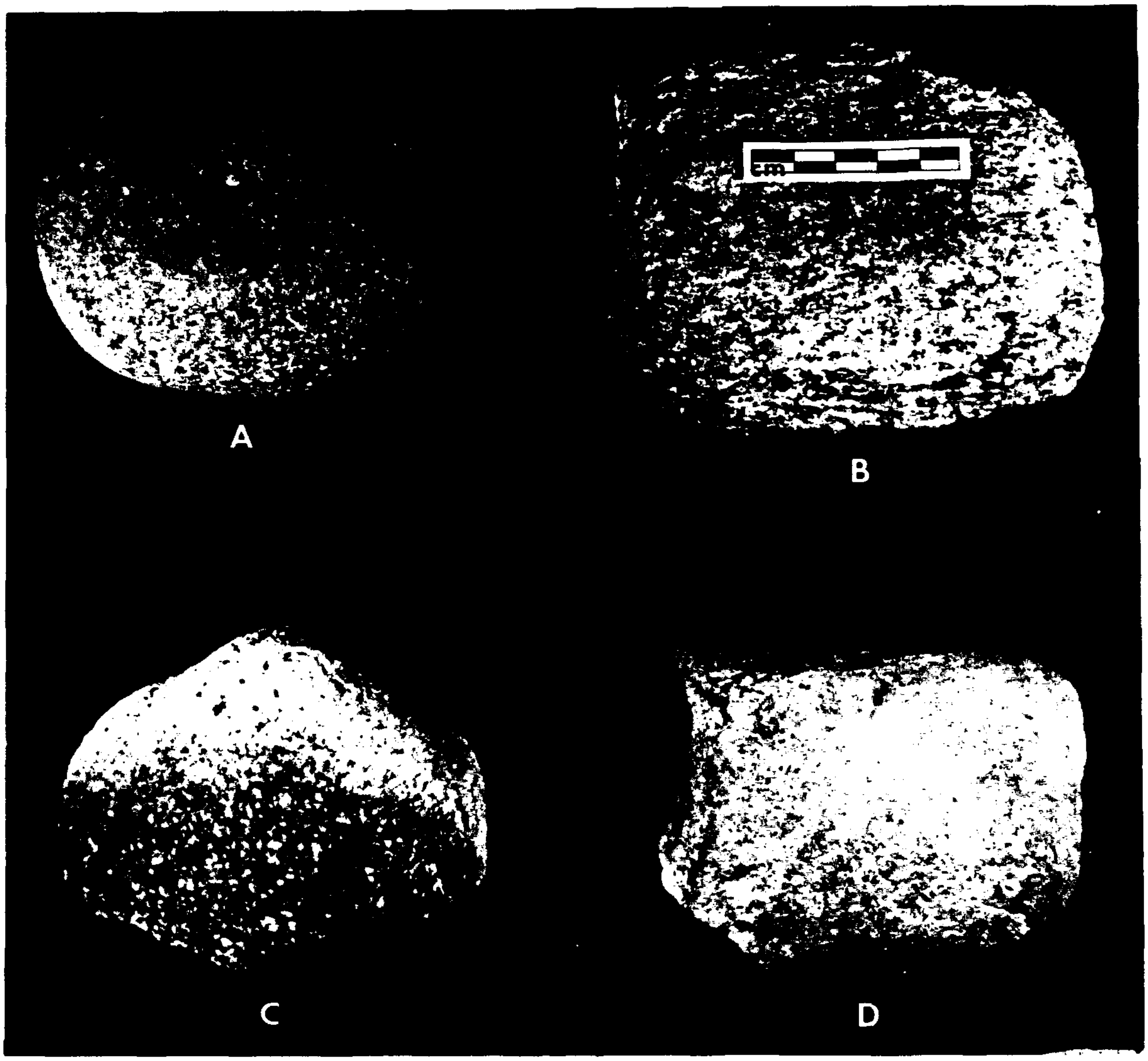


Figure 45. Photos of Ground Stone Tools, Antelope Dreamer Site (39LM146). A: Combination complex hand-held grinding/crushing tool (mano) (class 35) and bipolar hammer or anvil (class 28). B-D: Complex hand-held grinding/crushing tools (manos) (class 35).

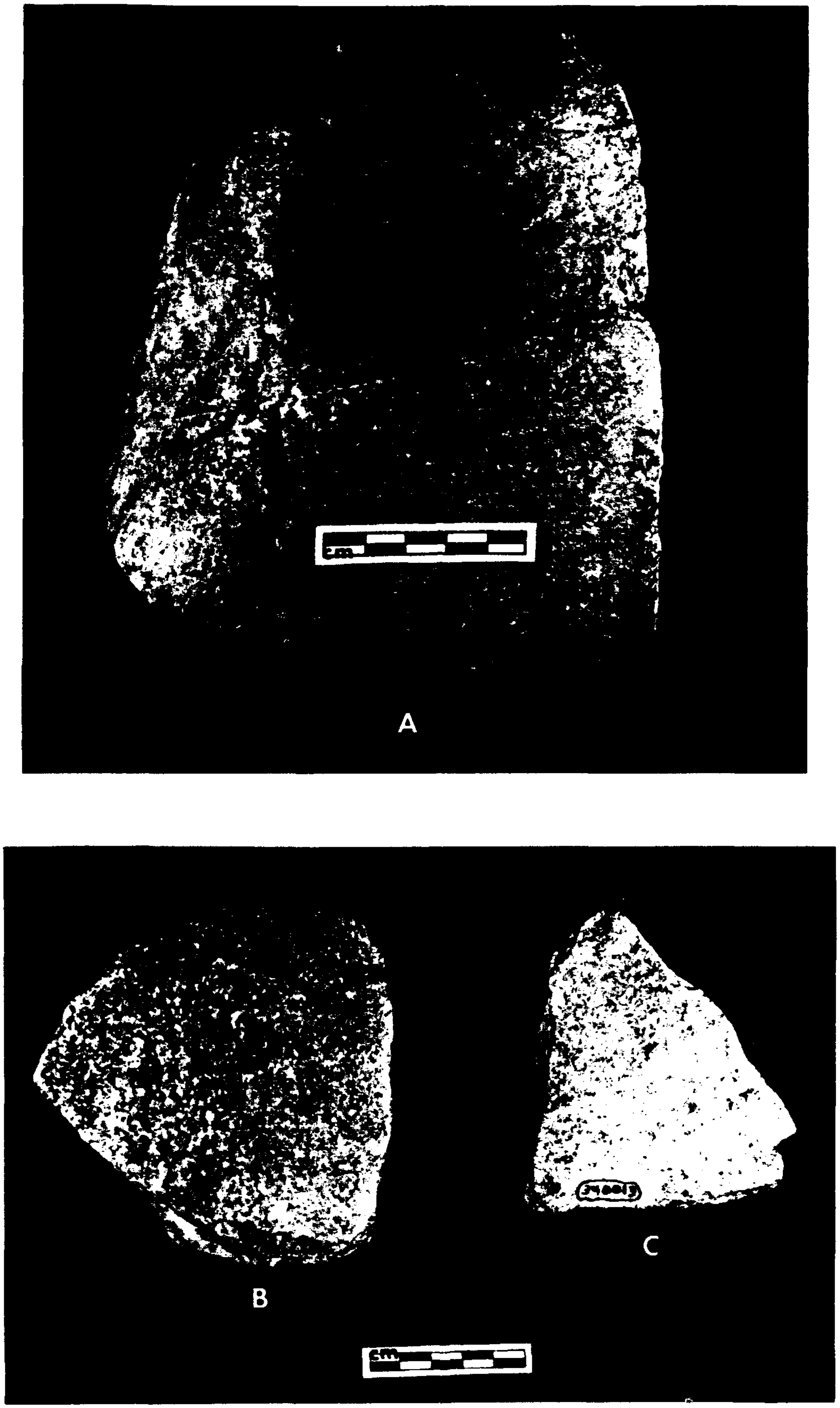


Figure 46. Photos of Ground Stone Tools, Antelope Dreamer Site (39LM146). A-C: Complex anvils used in grinding/crushing (metate/mortar) (class 36).

complex grinding/crushing tools (classes 35 and 36) are made exclusively of granitic stones. It should be noted here that the small grinding tool fragment discussed under the unknown functional group is made of compact sandstone.

Simple hand-held abrading tools (classes 33 and 34) were used to directly abrade materials such as wood and bone, particularly in the manufacture of other tool forms. The grooved forms were used to abrade or sharpen linear or pointed objects such as arrowshafts, awls, and tool edges (Ahler and Swenson 1985:336). Complex grinding/crushing tools (classes 35 and 36) were used in tandem — a hand-held mano was used on the work material against a stationary metate or anvil. The term complex indicates that these tools were not used individually. Complex grinding/crushing tools were primarily used to process subsistence products, especially plant foods such as seeds, although some may have also been used to process pigments (Ahler and Swenson 1985:336). No pigment-stained specimens were observed in the Antelope Dreamer sample, and all are thought to have been used to grind or crush seeds and other plant foods. The complex grinding/crushing tools from Antelope Dreamer are of simple, unpatterned manufacture, consisting of small cobble (mano) and slab (metate) forms.

Hammerstone/Anvils (Figure 44A-C, 45A). Ten tools in the Antelope Dreamer assemblage fall within this general functional group. Three are classified as bipolar hammers or anvils (class 28) and seven are classified as hammerstones or pounders (class 29). As was mentioned above, two of these specific functional occurrences (one from each class) were found on multipurpose tools that were also used as complex hand-held grinding/crushing tools (class 35) (Figures 44A and 45A). All of the hammerstone/anvil tools from the site are complete and usable (use-phase 3).

Bipolar hammers or anvils exhibit an area of facial pitting on at least one surface, usually near the center of the flatter face of the stone. Such use-wear has been experimentally reproduced in a number of different technological operations. Both hammer and anvil stones used in bipolar core reduction show this kind of wear, as do hammers used on intermediate tools (punches/wedges/chisels), and stones used as anvils for cracking nuts (Ahler and Swenson 1985:335). The latter are often referred to as "nutting stones."

Hammerstones or pounders were used to manufacture other stone tools and to break or pulverize various work materials (Ahler and Swenson 1985:335). Residues on some Plains Village specimens indicate that bone and pigment were among the materials that were broken or pulverized with these implements. An anvil of some sort was likely used in conjunction with the hammerstone during pulverization operations. Residues were not observed on any of the Antelope Dreamer specimens, so it is thought that most were used in stone tool manufacture.

Other Variability

Light patination was observed on the few Knife River flint (KRF) tools from extramural test units. KRF tools from intramural contexts were unpatinated. Heat treatment seems to have been confined to local chalcedonic stones, including porous quartzite and the various chalcedonies, especially

clear/gray chalcedony. The single freehand core from the site was made of porous quartzite. It was found in the hearth of House 11 (F116) along with a quantity of porous quartzite flaking debris. These specimens were badly burned, probably as much from the burning of the house as from their placement in the hearth. It would seem that it was the intention of the occupants of House 11 to heat treat the porous quartzite in order to improve its flaking qualities. Virtually no evidence of tool recycling was observed in the Antelope Dreamer sample. Many of the tools exhibited some degree of burning because most were recovered from burned house contexts.

Chipped Stone Flaking Debris

A total of 1752 G1-4 pieces of chipped stone flaking debris was recovered from the test excavations at Antelope Dreamer. Of this number, 1718 flakes are from contexts assigned the Initial Middle Missouri component, eight are from contexts assigned to the unknown component, and 26 are from ephemeral contexts. It is unclear whether or not the flaking debris attributed to the unknown component is in fact related to this enigmatic entity. These eight specimens, consisting of 1 G1, 3 G3, and 4 G4 flakes, could just as readily represent materials vertically displaced from the Initial Middle Missouri zone, as is clearly the case with the flakes in the ephemeral contexts. Consequently, the unknown component materials will not be considered further, and the flaking debris analysis will concentrate on those artifacts from the Initial Middle Missouri zone. All G-4 sized flakes are from water screen samples taken from test excavations into Houses 11 and 15.

Chipped stone flaking debris size grade data by test unit and archeological context are contained in Table 29. The overwhelming majority of the flaking debris from the Initial Middle Missouri zone was recovered from the intramural tests, with only a few specimens coming from extramural contexts. Water screen samples were not taken from the extramural tests, which accounts for the absence of G4 flaking debris in their samples. The numbers of G4 flaking debris in the water screen samples taken from test unit levels in Houses 11 and 15 are used to estimate or project the actual frequencies of G4 flaking debris that were present in the tests (Table 29). Water screen samples from excavation units in the two houses represent a one-ninth (11%) fraction of the each level within each test unit. Therefore, a multiplier of nine is used to estimate or project the actual number of G4 flakes per square meter in each test unit. These projected amounts of G4 flaking debris can then be compared in correct proportion to the quantities of G1-3 flaking debris. The samples from F116, the hearth in House 15, are exceptions to this procedure. As an aggregate, the two water screen samples from F116 represent a one-quarter (25%) fraction of the hearth matrix. Thus, a multiplier of four is used to project the actual number of G4 flakes that was present in F116.

The flaking debris sample from Antelope Dreamer is amenable to limited mass analysis procedures. One mass analysis technique involves calculating the ratio of numbers of G4 (small) to G1-3 (large) flakes (cf. Ahler and Swenson 1985:85, 193). This ratio provides a measure of the technological derivation of each flaking debris batch, where adequate samples are represented, based on data derived from replicative Knife River flint knapping experiments. These experiments show that core reduction and heavy percussion

Table 29. Chipped Stone Flaking Debris Size Grade Data by Test Unit and Context, Initial Middle Missouri Zone, Antelope Dreamer Site (39LM146).

Context/ Test Unit		Size Grade				Total	Projected
		Grade 1	Grade 2	Grade 3	Grade 4		Grade 4*
Extramural Tests							
1	n	-	-	6	na	6	na
	%	-	-	100.0	na	100.0	na
2	n	-	-	2	na	2	na
	%	-	-	100.0	na	100.0	na
4	n	-	-	-	na	-	na
	%	-	-	-	na	-	na
Sub-total	n	-	-	8	na	8	na
	%	-	-	100.0	na	100.0	na
House 11 Tests							
5	n	-	18	199	368	585	3312
	%	-	3.1	34.0	62.9	100.0	93.9
6	n	1	15	91	142	249	1278
	%	0.4	6.0	36.6	57.0	100.0	92.3
7	n	1	2	79	124	206	1116
	%	0.5	1.0	38.3	60.2	100.0	93.2
8	n	-	1	64	86	151	774
	%	-	0.7	42.4	57.0	100.1	92.3
Sub-total	n	2	36	433	720	1191	6480
	%	0.2	3.0	36.4	60.4	100.0	93.2

*Projected numbers of grade 4 flaking debris are based on actual numbers in water screen sample fractions; multiplier of 9 for House 11 and House 15 grade 4 samples; multiplier of 4 for the Feature 116 grade 4 sample.

AD-A245 771 ARCHEOLOGICAL TEST EXCAVATIONS AT EIGHT SITES IN THE LAKE SHARPE PROJECT..(U) WESTERN CULTURAL RESOURCE MANAGEMENT INC BOULDER CO D L TOOM APR 90 XA-USAED/NE

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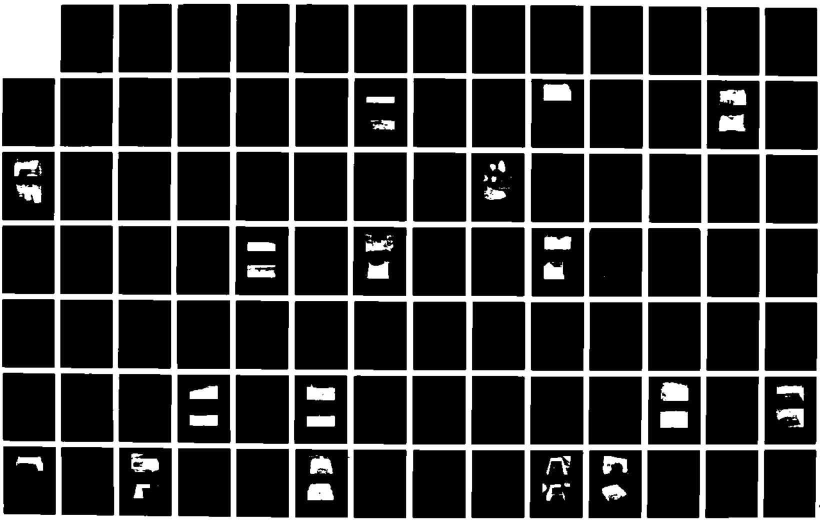

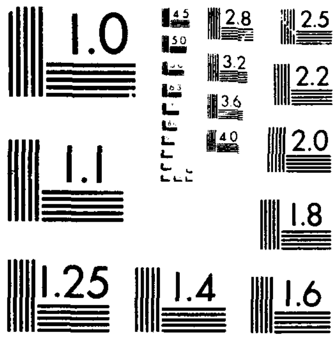
1.0
1.1
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1.6
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2.2
2.5
2.8
3.2
3.6
4.0

Table 29. Chipped Stone Flaking Debris Size Grade Data by Test Unit and Context, Initial Middle Missouri Zone, Antelope Dreamer Site (39LM146) (Continued).

Context/ Test Unit		Size Grade Grade 1	Grade 2	Grade 3	Grade 4	Total	Projected Grade 4*
House 15 Tests							
3	n	-	2	42	75	119	675
	%	-	1.7	35.3	63.0	100.0	93.9
9	n	-	1	18	20	39	180
	%	-	2.6	46.2	51.3	100.1	90.5
Sub-total	n	-	3	60	95	158	855
	%	-	1.9	38.0	60.1	100.0	93.1
Feature 116, House 11							
5-8	n	1	32	231	97	361	388
	%	0.3	8.9	64.0	26.9	100.1	59.5
Total	n	3	71	732	912	1718	7723
	%	0.2	4.1	42.6	53.1	100.0	90.5

flaking of large bifaces yield G4/G1-3 ratios ranging from about 1.63:1 to 4.03:1, while pressure flaking and light percussion flaking of small flake tools (combined final manufacturing and maintenance/resharpening operations) produces a mean ratio of about 13.3:1 (Ahler and Christensen 1983:372-378). Ahler and Swenson (1985:193) note that "village site flake samples typically produce ratios falling between these extremes." They interpret this as indicating that a combination of core reduction and pressure/maintenance flaking operations were performed at village sites, with variation in the ratio from one village context to another indicating changes in emphasis on flaking of large versus small lithic artifacts.

An overall G4/G1-3 flaking debris ratio of 9.6:1 is calculated for the Antelope Dreamer samples based on the totals in Table 29. This figure is arrived at by dividing the projected number of G4 flakes (n=7723) by the total number of G1-3 flakes (n=806). A G4/G1-3 ratio of 9.6:1 demonstrates that both core reduction and pressure/maintenance stone tool technological operations were performed at the site. However, the ratio is closest to the experimental pressure/maintenance value (13.3:1), therefore, the sample is dominated by debris from the manufacture and maintenance of smaller sized stone tools. It can be concluded on the basis of this limited sample that stone tool technological operations at Antelope Dreamer emphasized pressure

flaking and light percussion flaking of relatively small tool forms during final manufacturing, maintenance, and resharpening procedures. Grosser stone tool technological operations such as core reduction and heavy percussion flaking of relatively large tool forms were performed less frequently.

Considerable variation in the spatial distribution of stone tool technological operations can be seen among the house samples when data from intramural contexts are compared. The samples from House 11 and House 15 yield nearly identical G4/G1-3 ratios of 13.8:1 and 13.6:1, respectively, when the flaking debris from F116 is excluded from the House 11 sample (cf. Table 29). The flaking debris sample from F116, the hearth in House 11, yields a G4/G1-3 ratio of 1.5:1. On the basis of these data, it would appear that pressure/maintenance operations on small stone tools were routinely performed inside houses beyond the hearths, and possibly on the roof. Conversely, core reduction of larger tools was apparently performed over the hearth in House 11, probably to catch the larger pieces of flaking debris resulting from this operation. The heat treatment of porous quartzite in the hearth, discussed above under stone tools, is another significant factor likely contributing to the low G4/G1-3 flaking debris ratio for the F116 sample.

Flaking debris raw material type data by size grade for selected Initial Middle Missouri samples are presented in Table 30. The samples selected for the raw material analysis consist of those with relatively large quantities of debris from House 11 (including F116) and House 15. The lithic types represented in the flaking debris samples do not differ significantly from those identified in the stone tool analysis. Local materials comprise 57.5% of the flaking debris sample, as opposed to 38.7% nonlocal materials. Burnt chalcedony (miscellaneous resource group) accounts for the remaining 3.8%. The tool sample consists of 69.4% local materials and 27.3% nonlocal materials. The differences between these figures are largely a product of the absence of local materials used in the manufacture of ground stone tools in the chipped stone flaking debris samples. A minor amount of plate chalcedony (1.6%) is present in the flaking debris, a nonlocal lithic type of the western resource group that was not identified in the tool sample. Flattop chalcedony, another lithic type of the western resource group, also exhibits a somewhat higher proportion of use in the flaking debris sample than in the tool sample.

Much of the porous quartzite flaking debris (n=146, 37.2%) comes from F116, the hearth in House 11, where it was associated with a freehand core of the same material. As was discussed above, the core (and perhaps some of the flakes) was probably being heat treated in the hearth, so the flaking debris likely derives from the preparation and/or reduction of this core.

Fire-Cracked Rock

A total of 56,289 g of G1-3 fire-cracked rock (FCR) was obtained from the test excavations at Antelope Dreamer. Of this amount, 55,670 g was recovered from the Initial Middle Missouri occupation zone (Table 31). No FCR is attributable to the unknown component, leaving a total of only 619 g in ephemeral contexts as a result of vertical displacement from the Initial Middle Missouri zone. The overwhelming majority of the FCR (54,831g, 98.5%) is from Houses 11 and 15. Only 839 g (1.5%) is from the extramural tests

Table 30. Chipped Stone Flaking Debris Raw Material Type Data by Size Grade, Selected Initial Middle Missouri Samples, Antelope Dreamer Site (39LM146).*

Raw Material Type	Size Grade				Total	
	Grade 1	Grade 2	Grade 3	Grade 4	n	%
<u>Local Resource Group</u>						
02 Coarse Yellow TRSS	-	-	5	1	6	0.5
03 Coarse Red TRSS	-	-	1	1	2	0.2
04 Solid Quartzite	-	1	21	20	42	3.4
05 Porous Quartzite	2	29	176	185	392	32.0
06 Jasper/Chert	-	-	14	20	34	2.8
08/09/10 Various Chalcedonies	-	10	52	130	192	15.7
13 Basaltic	-	3	1	-	4	0.3
16 Quartz	-	-	7	4	11	0.9
35 Other Quartzite	1	2	14	4	21	1.7
Subtotal, Local	3	45	291	365	704	57.5
<u>Northern Resource Group</u>						
01 Smooth Gray TRSS	-	-	12	3	15	1.2
28 Knife River Flint	-	3	127	82	212	17.3
<u>Western Resource Group</u>						
07 Flattop Chalcedony	-	-	43	68	111	9.1
11 Plate Chalcedony	-	-	10	10	20	1.6

*Flaking debris samples selected for raw material type analysis include those from House 11 (catalog nos. 514, 515, 522, 523, 614, 615, 616, 617, 622, 623, 716, 717, 722, 723, 816, 817, 822, 823), House 15 (catalog nos. 304, 305, 316, 317, 904, 905, 906, 907, 916, 917), and Feature 116 (catalog nos. 526, 627, 726, 828).

Table 30. Chipped Stone Flaking Debris Raw Material Type Data by Size Grade, Selected Initial Middle Missouri Samples, Antelope Dreamer Site (39LM146) (Continued).*

Raw Material Type		Size Grade				Total	
		Grade 1	Grade 2	Grade 3	Grade 4	n	%
Southern Resource Group							
15 Bijou Hills SS		-	10	51	55	116	9.5
Subtotal, Nonlocal		-	13	243	218	474	38.7
Misc. Resource Group							
12 Burnt Chalcedony		-	3	32	11	46	3.8
Total	n	3	61	566	594	1224	100.0
	%	0.3	5.0	46.2	48.5	100.0	

Table 31. Fire-Cracked Rock Size Grade Data by Test Unit and Context, Initial Middle Missouri Zone, Antelope Dreamer Site (39LM146).

Context/ Test Unit		Size Grade (grams)			Total
		Grade 1	Grade 2	Grade 3	
Extramural Tests					
1	wt	-	-	5	5
	%	-	-	100.0	100.0
2	wt	776	21	19	816
	%	95.1	2.6	2.3	100.0
4	wt	-	14	4	18
	%	-	77.8	22.2	100.0
Subtotal, Extramural	wt	776	35	28	839
	%	92.5	4.2	3.3	100.0

Table 31. Fire-Cracked Rock Size Grade Data by Test Unit and Context, Initial Middle Missouri Zone, Antelope Dreamer Site (39LM146) (Continued).

Context/ Test Unit		Size Grade (grams)			Total
		Grade 1	Grade 2	Grade 3	
House 11 Tests					
5	wt	808	40	62	910
	%	88.8	4.4	6.8	100.0
6	wt	13,672	52	61	13,785
	%	99.2	0.4	0.4	100.0
7	wt	6,904	47	97	7,048
	%	98.0	0.7	1.4	100.1
8	wt	6,404	131	93	6,628
	%	96.6	2.0	1.4	100.0
Subtotal, House 11	wt	27,788	270	313	28,371
	%	97.9	1.0	1.1	100.0
House 15 Tests					
3	wt	4,595	122	49	4,766
	%	96.4	2.6	1.0	100.0
9	wt	21,478	158	58	21,694
	%	99.0	0.7	0.3	100.0
Subtotal, House 15	wt	26,073	280	107	26,460
	%	98.5	1.1	0.4	100.0
Total	wt	54,637	585	448	55,670
	%	98.1	1.1	0.8	100.0

(Table 31). Quantities of FCR were present on the floor and throughout the rooffall of both houses. House 15 contained a disproportionately higher amount of FCR than House 11. Much of the FCR from House 11 is from the hearth (F116) (11,993g, 42.3%). Virtually all of the FCR from Antelope Dreamer consists of local granitic stones derived from glacial-fluvial gravels. Minor amounts of basaltic and quartzite FCR from the same source are also present.

Other Artifacts

Other artifacts recovered from the test excavations at Antelope Dreamer include quantities of natural clinker, shell, ocher, burned earth/fired clay, ash, charcoal/wood, and recent historic material. Distributional data on other artifacts recovered from the Initial Middle Missouri zone are presented in Table 32. The majority of these materials are from the House 11 and House 15 excavations.

Natural Clinker

A total of 27 pieces of natural clinker are present in the site collection. All but one of these specimens is from the Initial Middle Missouri zone, and all of these are from Houses 11 and 15 (Table 32). The exception was recovered from an ephemeral context immediately above House 15. The majority of the clinker consists of small G3 size fragments. There is no evidence that any of this clinker was used as tools, and all of the specimens are thought to be debris from the manufacture of clinker abrading tools.

Shell

Twenty-one pieces of unmodified shell are present in the site collection. Eighteen of these specimens, all of which consist of bivalve (mussel) shell fragments, are from the Initial Middle Missouri occupation zone in association with House 11 and House 15 (Table 32). The other three specimens are from ephemeral contexts above the houses. Most are small G3 fragments, and only one is potentially identifiable. It consists of the anterior dorsal portion of a probable *Lampsilis* sp. The most likely sources of mussel shell found in archeological sites in the region include the less turbid tributary streams of the Missouri River, sloughs and backwater lakes in the Missouri River floodplain, and perhaps also some stable-bottomed reaches of the Missouri River proper (cf. Cvancara 1975; Hoke 1983). The *Lampsilis* specimen and all of the other shell debris were probably collected locally and used for food and/or raw materials for the manufacture of shell artifacts. The collection of fresh water mussels does not appear to have been an important activity at the site based on the data at hand.

A single modified shell artifact was found in a context assigned to the unknown component. It consists of a moderate-sized gastropod shell that has been ground flat on one side. Its actual association with the unknown component is open to question, even if such a component actually exists, which is also questionable. It is quite possible (even probably) that the specimen was vertically displaced upward from the Initial Middle Missouri zone.

Table 32. Data on Other Artifacts by Test Unit and Context, Initial Middle Missouri Zone, Antelope Dreamer Site (39LM146).

Context/ Test Unit		Natural Clinker	Shell		Ocher (g)	Burned Earth/ Fired Clay (g)	Ash (g)	Charcoal/ Wood (g)
Extramural Tests								
1	n	-	-	wt	-	-	-	-
2	n	-	-	wt	-	-	-	3
4	n	-	-	wt	-	-	-	-
Subtotal	n	-	-	wt	-	-	-	3
House 11 Tests								
5	n	8	4	wt	3	1820	38	16
6	n	4	3	wt	1	675	7	381
7	n	2	7	wt	-	444	623	85
8	n	3	-	wt	3	764	525	173
Subtotal	n	17	14	wt	7	3703	1193	655
House 15 Tests								
3	n	9	4	wt	-	71	-	676
9	n	-	-	wt	-	132	-	717
Subtotal	n	9	4	wt	-	203	-	1393
Total	n	26	18	wt	7	3906	1193	2051

The modified gastropod specimen under consideration was submitted for identification to Mr. Paul R. Picha of the Department of Anthropology, University of North Dakota. He was assisted in this endeavor by Dr. Alan M. Cvancara, a malacologist in the Department of Geology at UND, who made the actual identification. Picha's report is as follows:

> A single modified exotic gastropod artifact from 39LM146 was identified. The nonfossilized snail is tentatively classified to the family level as Neritidae (?) (A. M. Cvancara, personal communication to P. Picha, 21 August 1989). Due to the somewhat eroded appearance of the spire, and because part of the shell aperture has been broken away, a more specific identification is not possible. This thick-walled specimen exhibits a globular morphology with a low spire which is in accord with this general grouping of snails. Among the possible snails likely to be involved here are several genera of freshwater, brackish, and marine gastropods which inhabit the waterways of the southeastern United States.
>
> In the case of the specimen from 39LM146, a portion of the last whorl has been abraded and ground nearly flat resulting in a somewhat smaller oval perforation of the shell wall. This type of modification permits the object to be hung for decorative suspension, such as for use as a bead or other ornament.
>
> Nonlocal freshwater and marine shell artifacts have been encountered in other nearby archeological sites in the Big Bend region. Caldwell and Jensen (1969:68) report the occurrence of *Anculosa* sp. shells from southeastern U.S. sources in collections from the Pretty Head (n=19), Langdeau (n=1), and Jiggs Thompson (n=1) sites, all of which are assigned to the Plains Village tradition, Initial Middle Missouri variant, Grand Detour phase. In current malacological synonymy, *Anculosa* sp. = *Leptoxis* sp., being members of the gastropod family *Neritidae*. This finding provides minimal support to suggest a temporal/cultural linkage between the aforementioned Grand Detour phase components and the village component at Antelope Dreamer, although it must be noted that the actual association of this specimen within the Antelope Dreamer site is uncertain. Other marine shells (e.g., *Busycon* sp.) from the southeast U.S. also occur in low frequencies at Initial Middle Missouri sites in the region (Lehmer 1971:95).

Ocher or Pigment

Three G2-3 sized pieces of ocher or pigment weighing a total of 7 g was recovered from the Initial Middle Missouri zone (Table 32). It is all associated with House 11. No other such materials were found in other contexts at the site. Two of the specimens consist of a solid form of hematite that was probably used in the manufacture of red coloring agents. The third specimen is a solid form of limonite that was likely used to make yellow coloring agents.

Burned Earth and Fired Clay

Relatively large quantities of consolidated G1-3 burned earth were recovered from House 11 (3703 g). A more modest amount of this material (203 g) was found in House 15 (Table 32). Minor amounts of burned earth (12 g) were found in ephemeral contexts as a result of vertical displacement from the house remains. A mere 3 g is from contexts assigned to the unknown component. Virtually all of this material is associated with the inner (burned) rooffall zone of the houses. Most of it consists of burned silt loam; very little actual fired clay is represented. It would appear from this evidence, in addition to the profile descriptions, that the blanket of earth covering the houses consisted almost entirely of silt loam. Local clays do not seem to have been used to any extent in house construction at the site on the basis of this limited sample.

Ash

Consolidated pieces of G1-3 ash weighing a total of 1193 g were recovered from the House 11 excavation. This represents all of the ash in the Antelope Dreamer collection. As might be expected, it is all from F116, the hearth in House 11.

Charcoal and Wood

A total of 2052 g of G1-3 pieces of charcoal and wood is present in the site collection. All of this material is from the Initial Middle Missouri occupation zone, with the exception of 1 g from an ephemeral context. Virtually all of the charcoal and wood is associated with Houses 11 and 15 (Table 32), consisting of the remains of posts, beams, and other structural members found in the inner rooffall zone. Some charcoal representing spent fuel was also found in F116, the hearth in House 11. Much of the weight in the sample comes from the three intact (wood) post butts removed from the floor of House 15. Selected feature specimens are identified in Appendix A (Van Ness, this report).

Recent Euroamerican Artifacts

Eleven G2-3 pieces of recent metal were found from 0-10 cm sd in Test 1. These consist of four aluminum pull tabs and one pull tab fragment from beverage cans, four .22-caliber cartridge cases, one complete .22 cartridge, and one .22-250 cartridge case. All of the .22 cartridges are long rim-fire ammunition with an "F" headstamp, indicating manufacture by the Federal Cartridge Company. The center-fire .22-250 cartridge case has a "W-W Super" headstamp, indicating it was made by the Winchester-Western Division of the Olin Corporation. All of these specimens are of recent manufacture and reflect infrequent, current use of the site for recreation and hunting.

The only other recent artifact found at the site consists of a piece of G3 foam rubber from 10-20 cm sd in Test 6. It is probably from a tennis shoe worn by one of the archeological crew members.

Vertebrate Fauna

Vertebrate fauna remains recovered from test excavations at Antelope Dreamer total 4929 g of G1-3 unmodified bone debris. Over half of the bone debris from the site (2782 g, 56.4%) show evidence of burning. The sample is highly fragmented for the most part. A number of G1-3 specimens are potentially identifiable, as are several G4-5 specimens recovered from the water screen samples. Modified specimens (bone tools) total some 28 separate G1-5 pieces, many of which are fragments from a far lesser number of individual implements. The identifiable and modified bone from the site are considered in detail in Appendix B (Wheeler, this report). Only the general characteristics of the bone sample are discussed here.

The vast majority of the bone from the site is from the Initial Middle Missouri occupation zone (4475 g, 90.8%), most of which shows evidence of burning (2778 g, 62.1%). All but 173 g of bone from the Initial Middle Missouri zone is from Houses 11 and 15, with a disproportionately higher amount coming from House 11 (Table 33). The high percentage of burned bone in the Initial Middle Missouri sample is primarily a result of the burning of the houses. Most of this bone (77.0%) is in the G2-3 size grade classes, indicating the highly fragmented character of the sample. All of the modified bone specimens are in the Initial Middle Missouri sample, including seven pieces from House 11 and 21 pieces from House 15. The 21 or so pieces of modified bone from House 15 appear to be fragments from a single implement.

Contexts assigned to the unknown component contained at total of 441 g of G1-3 unmodified bone, including 403 g in G1, 31 g in G2, and 7 g in G3. Only 1 g of G3 bone showed any indications of burning. Most of the bone attributed to the unknown component consists of four complete and identifiable elements from a large mammal identified as bison (Appendix B; Wheeler, this report). The presence of these elements in the upper levels of the fill overlying the remains of House 11 is the primary basis for the identification of this possible component. The remaining 13 g of bone in the site sample are from ephemeral contexts.

The vast majority of the bone in the faunal aggregate from the site is identified as large mammal, principally bison. Other mammalian species represented to a far less extent include deer, deer/pronghorn, bobcat, skunk, rabbit, prairie dog, and various small rodents. A few elements from birds, fish, and frogs/toads/snakes/lizards are also represented (Appendix B; Wheeler, this report).

Macrobotanical Remains

Macrobotanical remains from the Antelope Dreamer excavations are considered in detail in Appendix A (Van Ness, this report). Virtually all of these remains are associated with the Initial Middle Missouri houses, particularly House 11 (F107 and F116). A wide variety of species are identified in the samples, including both domesticated and wild plants. Wood and wood charcoal identifications indicate that both juniper and cotton wood were used as primary structural supports in house construction. Domesticated cultigens include corn (*Zea mays*) and probably two varieties of sunflower

Table 33. Unmodified Bone Size Grade Data by Test Unit and Context, Initial Middle Missouri Zone, Antelope Dreamer Site (39LM146).

Context/ Test Unit		All Bone (grams)				Burned Bone (grams)			
		G1	G2	G3	Total	G1	G2	G3	Total
Extramural Tests									
1	wt	69	31	23	123	-	-	4	4
	*%	56.1	25.2	18.7	100.0	-	-	17.4	3.3
2	wt	-	18	30	48	-	-	-	-
	%	-	37.5	62.5	100.0	-	-	-	-
4	wt	-	-	2	2	-	-	-	-
	%	-	-	100.0	100.0	-	-	-	-
Subtotal	wt	69	49	55	173	-	-	4	4
	%	39.9	28.3	31.8	100.0	-	-	7.3	2.3
House 11 Tests									
5	wt	310	1007	465	1782	153	788	286	1227
	%	17.4	56.5	26.1	100.0	49.4	78.3	61.5	68.9
6	wt	240	263	199	702	66	241	149	456
	%	34.2	37.5	28.3	100.0	27.5	91.6	74.9	65.0
7	wt	93	399	276	768	78	318	204	600
	%	12.1	52.0	35.9	100.0	83.9	79.7	73.9	78.1
8	wt	244	97	125	466	11	92	99	202
	%	52.4	20.8	26.8	100.0	4.5	84.9	79.2	43.3
Subtotal	wt	887	1766	1065	3718	308	1439	738	2485
	%	23.9	47.5	28.6	100.0	34.7	81.5	69.3	66.8

*Burned bone percentages are stated as a product of the quantities of "all bone."

Table 33. Unmodified Bone Size Grade Data by Test Unit and Context, Initial Middle Missouri Zone, Antelope Dreamer Site (39LM146) (Continued).

Context/ Test Unit		All Bone (grams)				Burned Bone (grams)			
		G1	G2	G3	Total	G1	G2	G3	Total
House 15 Tests									
3	wt	-	101	110	211	-	30	39	69
	%	-	47.9	52.1	100.0	-	29.7	35.5	32.7
9	wt	74	139	160	373	47	87	86	220
	%	19.8	37.3	42.9	100.0	63.5	62.6	53.8	59.0
Subtotal	wt	74	240	270	584	47	117	125	289
	%	12.7	41.1	46.2	100.0	63.5	48.8	46.3	49.5
Total	wt	1030	2055	1390	4475	355	1556	867	2778
	%	23.0	45.9	31.1	100.0	34.5	75.7	62.4	62.1

(*Helianthus*, Types 1 and 2). The remains of beans, squash, and tobacco, other domesticates known to be grown by Plains Villagers, were not identified in the samples. The absence of these cultigens is most likely the result of sample bias. The variety of edible wild plant remains in the samples is truly impressive, including, among others, goosefoot, beeweed, sunflower (*Helianthus*, Type 3), wild plum, various cherries, wild grape, pea, prickly pear, bulrush or sedge, and several kinds of berries. Other wild plant remains potentially used in house construction or for other domestic purposes are also present (Appendix A; Van Ness, this report). The destruction of the houses by fire is seen as a critical factor in the preservation of quantities of diverse macrobotanical remains at Antelope Dreamer.

Artifact Distributions and Densities

Data on the distribution and density of major prehistoric artifact classes within the Initial Middle Missouri zone at Antelope Dreamer are contained in Table 34. Quantities of artifacts are stated according to number (n) or weight (wt) per m^2 of excavated area for each test and archeological context, as well as for the site as a whole. A cursory examination of Table 34 clearly shows that artifact densities are by far the highest in the houses. Artifact densities in the extramural tests are essentially negligible, but this may be a reflection of sample bias in view of the small number of extramural tests excavated at the site. However, it does seem safe to conclude that the majority of the artifactual remains at the Antelope Dreamer

Table 34. Major Prehistoric Artifact Class Distribution and Density Data by Test Unit and Context, Initial Middle Missouri Zone, Antelope Dreamer Site (39LM146).

Context/ Test Unit	Rim Sherds	Body Sherds	Stone Tools	Flaking Debris*	FCR (g)	Unmodified Bone (g)
<u>Extramural Tests</u>						
1	-	35	3	6	5	123
2	1	11	9	2	816	48
4	-	-	-	-	18	2
Subtotal	1	46	12	8	839	173
$n/wt/m^2$	0.3	15.3	4.0	2.7	279.7	57.7
<u>House 11 Tests</u>						
5	12	465	41	241	910	1782
6	3	257	14	124	13,785	702
7	9	213	16	212	7,048	768
8	1	102	13	158	6,628	466
Subtotal	25	1037	84	735	28,371	3718
$n/wt/m^2$	6.3	259.3	21.0	183.8	7,092.8	929.5
<u>House 15 Tests</u>						
3	2	161	10	44	4,776	211
9	5	140	15	19	21,694	373
Subtotal	7	301	25	63	26,460	584
$n/wt/m^2$	3.5	150.5	12.5	31.5	13,230.0	292.0
Total	33	1384	121	806	55,670	4475
$n/wt/m^2$	3.7	153.8	13.4	89.6	6,185.6	497.2

*Includes size grade 1-3 flaking debris only.

site are to be found within the house remains. The apparent lack of substantial extramural midden accumulation at the site suggests a relatively short-term occupation for the Initial Middle Missouri village component.

Discussion and Conclusions

The Antelope Dreamer site clearly functioned as a permanent residential base for a group of Plains Village people affiliated with the Initial Middle Missouri variant. A Grand Detour phase affiliation is also likely but remains to be confirmed by additional research. Radiocarbon age estimates indicate a date of occupation during the late A.D. 1200s (ca. A.D. 1270). The village does not seem to have been occupied for any considerable length of time judging by the low extramural artifact densities and the apparent absence of any extramural midden accumulation. Subsistence at the site reflects a mixed economy based on hunting, gathering, and horticulture. Both plant and animal resources were used for food and as sources of raw material for the manufacture of tools, facilities, and other items. Exploited animal resources include various species of both large and small mammals; bison appears to have been the preferred quarry. Fish and shell fish are present as minor subsistence elements. An impressive variety of plant resources was also used at the site, including a number of wild and domesticated species. Identified cultigens include corn and certain species of sunflower.

In general, the technology employed at the site is typical of that exhibited by other Initial Middle Missouri components. The ceramic assemblage is dominated by various types of Cable ware; types of Grass Rope ware and Sanford ware are also common and represented in equal proportions. Relatively high percentages of Sanford ware are apparently not found in identified Grand Detour phase collections. The presence of Sanford ware in the ceramic assemblage suggests some sort of direct relationship with the Over focus, particularly the recently defined Lower James phase. A "diamond eye" design recorded on a Cable ware vessel (Anderson Tool Impressed type) indicates a definite stylistic link between the occupants of the Antelope Dreamer village and village sites of the Lower James phase, especially the Mitchell site. It is possible that this vessel was a trade piece that came directly from a Lower James phase village.

The lithic technology employed at the site consists of both chipped stone and ground/pecked stone tools. These tools were used to perform a wide variety of tasks on an equally broad array of materials, including the acquisition and processing of various plant and animal food products and the manufacture of other technological elements from materials such as stone, wood, bone, and hide. Recognized arrow point styles are patterned after the general Plains Side-Notched point type. The relatively high percentage of ground stone tools in the sample, including a number of complex mano and metate forms, reflects a heavy reliance on plant foods. Historic documentation indicates that Plains Villagers usually processed corn, the most common domesticate, by pounding it in a wooden mortar with a wooden pestle (Will and Hyde 1917). Consequently, it is thought that the grinding/crushing tools and other functionally related ground stone implements in the Antelope Dreamer sample were used primarily to process wild plant foods such as seeds and nuts. This interpretation is consistent with the results of the macrobotanical analysis, which indicates considerable exploitation of edible

species of wild plants in addition to the use of some of the usual domesticated species.

Lithic raw materials used in the manufacture of chipped stone tools show a primary reliance on locally available materials. Lesser numbers of various nonlocal lithic types are also present in the chipped stone samples, consisting of materials from the northern, western, and southern resource groups, including smooth gray Tongue River silicified sediment, Knife River flint, Flattop chalcedony, plate chalcedony, and Bijou Hills silicified sediment. Knife River flint is the most common nonlocal lithic type, as well as the second most popular type of all the recorded lithic raw materials. A high percentage of Knife River flint is characteristic of most other Middle Missouri tradition collections (Ahler 1977a; Johnson 1984a). No clearly exotic, nonlocal lithic materials (e.g., obsidian) are represented which would indicate long-distance trade relationships that extended well beyond the study region. All of the other nonlocal lithic materials are commonly found in late prehistoric assemblages in the Big Bend region. Such materials could have been acquired either through a regional (subarea-wide) trade network, operating within and around the Middle Missouri subarea, or through direct acquisition by specialized task groups working beyond the Big Bend region proper. The only clearly exotic, nonlocal material of any kind that was identified in the site collection and would indicate truly long-distance trade relations is a single modified shell artifact, which is thought to have come from some source in the southeastern United States. This specimen presents us with an interpretive problem, however, because it is not directly relatable to the village component at Antelope Dreamer.

The excavations into structural features yielded insufficient data to suggest a definite method of construction for the dwellings at the site. However, it can be concluded that the houses at Antelope Dreamer are based on the general architectural style of the Middle Missouri tradition -- rectangular-shaped, semisubterranean earthlodges. On the basis of the limited information that is available, it would appear that two somewhat different kinds of houses were used at the site. The floor (house pit) of one kind of earthlodge, represented by House 11, was dug a considerable distance (ca. 50 cm or more) beneath the former occupation surface. This kind of structure will ordinarily leave a conspicuous surface depression upon its collapse. The floor of the other kind of earthlodge, represented by House 15, was not dug nearly as deeply beneath the former occupation surface (ca. 25 cm or less?). This kind of structure will leave little or no surface expression after its collapse. One can speculate that houses like House 11 represent more substantial, permanent dwellings constructed for long-term occupation. Thus, houses like House 15 may be less substantial dwellings that were only occupied temporarily while the more permanent structures were under construction. Additional excavations are required to fully evaluate the architectural variability represented at the site. However, it should be noted in passing that not all of the house remains at the site are marked by obvious surface depressions. The discovery of shallow subsurface dwellings like House 15 indicates that the actual number of earthlodges at the site is greater than the number suggested by the UND surface reconnaissance (Figure 20).

It was also found that the houses at Antelope Dreamer were covered by a thick blanket of earth. This blanket of earth was up to 40 cm thick on the roofs of two tested structures. Both cottonwood and juniper were identified from wood and charcoal samples taken from primary structural supports (i.e.,

posts and beams). A large subfloor basin-shaped hearth was found in the rear (north portion) of House 11. A portion of the surface of a large intramural subfloor cache pit was uncovered in House 15. The front of House 11, including the entryway, is estimated to have faced in a south-southwesterly direction. The orientation of House 15 is unknown, but the long axis of the house is believed to be oriented in a general east-west direction between two recognizable house depressions (Features 6 and 7) that also appear to have a general east-west orientation (cf. Figure 20).

The really unusual aspect of the Antelope Dreamer site is the placement of a permanent residential base (an earthlodge village) in the higher elevations of the Missouri Breaks zone well away from easily accessible sources of clean water and essential bottomland (floodplain) resources. Taking into account its relative inaccessibility and full view of the surrounding area, the site is situated in an obviously superior defensive position. The establishment of the village on a high bench surrounded by rugged terrain at some distance from critical resources suggests that defensibility was the primary locational consideration. In fact, the location of a village of its size and complexity in such an inhospitable setting is virtually unique in the Middle Missouri subarea. All things considered, what we seem to have here is a strong indication that the occupants of Antelope Dreamer were under considerable pressure from potentially hostile groups of people who also occupied the area, either intermittently or on a permanent basis. Just who these hostile groups might be is difficult to say, but one can speculate that only other Plains Villagers (possibly Initial Coalescent variant peoples) would have been a serious threat to the occupants of Antelope Dreamer.

VII. WINDY MOUNDS SITE (39LM149)

Site Description and Background

The Windy Mounds site (39LM149), formerly known as the Initials site, is located atop a high, flattopped hill or ridge in the USACE Narrows Area on the Big Bend peninsula (Figure 1). The site is situated at an elevation of about 1660 ft amsl at the northern margin of the Missouri Breaks zone. The ridge rises some 150 ft (45 m) above the surrounding terrain, offering a full panorama of the Narrows Area. The site contains two mound features near the center of the ridge. These are designated Feature 1 (Mound 1) and Feature 2 (Mound 2) (Figures 47 and 48). The area occupied by the mounds proper is about 20 X 20 m (400 m^2). The original name of the site (Initials) comes from a historic rock form component located on the southwestern part of the ridge-top. It consists of three groups of stones that appear to have been arranged to form the initials or names of some unknown individuals (Toom and Picha 1984:81-85). The site also exhibits a very sparse scattering of lithic debris over much of the surface of the ridge. The entire site area, including the mounds, historic rock forms, and lithic scatter, is about 2.5 ha (6.2 acres). The purpose of the investigations reported here is to test and evaluate the mounds.

Both mounds are small, low, somewhat irregularly shaped, subconical earthen features (Figure 48). The fill of the mounds contains numerous small pebbles. A dirt track road runs between the two mounds and over their outer margins, resulting in some disturbance. It is possible that a single linear feature was once present, with the establishment and continued use of the road separating it into two parts. Missouri River Commission and U.S. Coastal and Geodetic Survey (USCGS) bench marks have been set in each mound, also causing some disturbance. A third survey point is also present immediately to the southeast of the mounds (Figure 47). The ridge-top area of the mounds, the highest point in the Narrows Area, has apparently been used as a survey reference point since the late 1800s. On 1894 Missouri River Commission Maps (sheet 38), a triangulation station labeled "Neck" is illustrated on the ridge-top area of the mounds.

Mound 1, the larger of the two mounds, is roughly oval-shaped, measuring approximately 10 m north-south by 15 m east-west, with a height of about 0.5 m above the surrounding ground surface. The peak or highest part of Mound 1 is about 7 m in diameter. Mound 2 is roughly circular, with a diameter of approximately 5 m, and a height of about 0.5 m. The peak of Mound 2 is about 3.5 m in diameter. A small, circular depression about 2.0 m in diameter and 0.6 m deep is present near the center of the Mound 2, perhaps representing a collapsed burial pit, or more likely an old excavation by relic hunters (Figure 47). Ordinarily, such features in Middle Missouri subarea represent Plains Woodland period tumuli (e.g., Neuman 1960, 1961a, 1961b, 1975; Toom 1984b; Wood 1960).

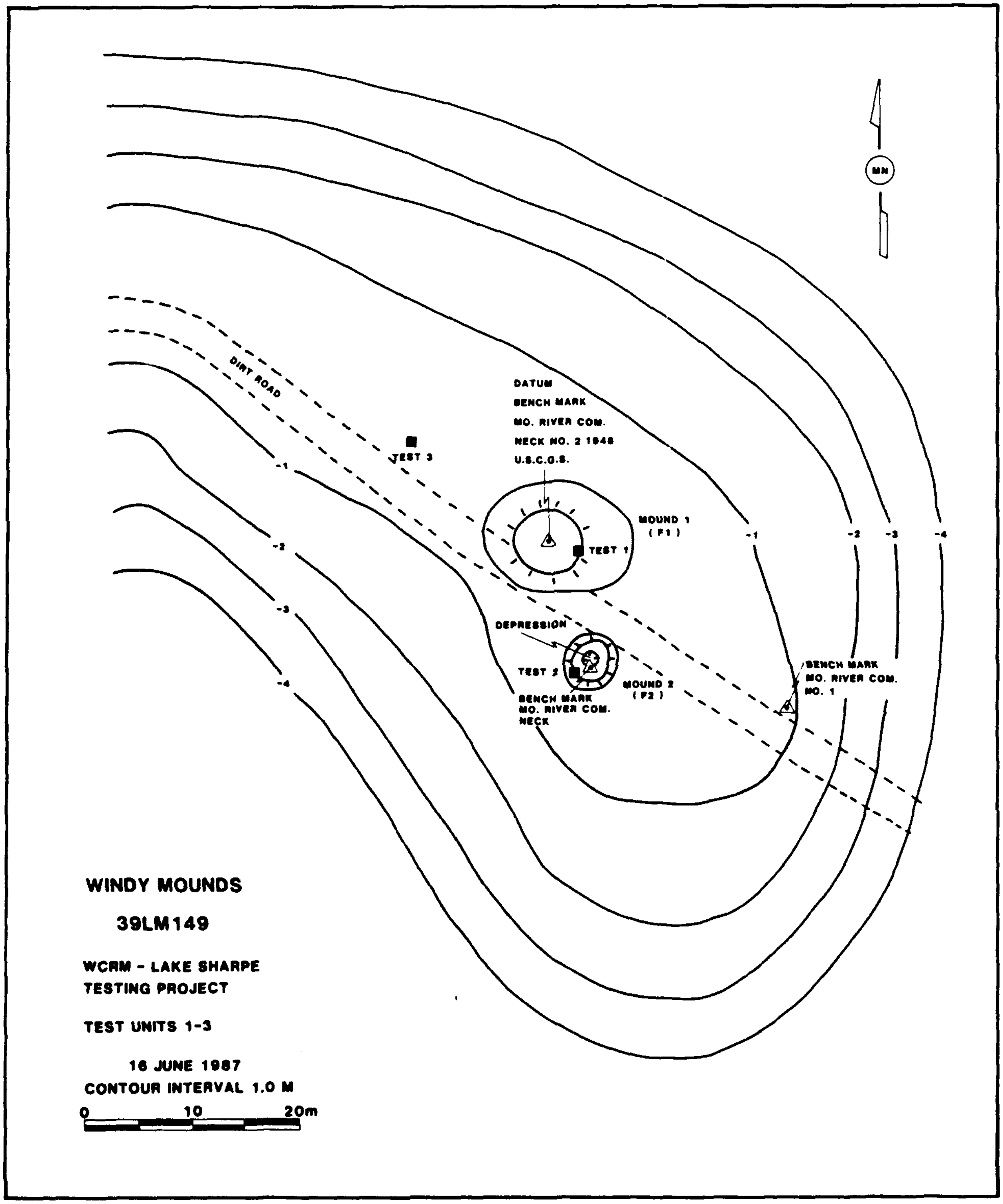


Figure 47. Contour Map of the Mounds Locality at the Windy Mounds Site (39LM149) (base map abstracted from Toom and Picha 1984:82).

A

B

Figure 48. Photos of Mounds 1 and 2, Windy Mounds Site (39LM149). A: Mound 1 (Feature 1), right with transit; Mound 2 (Feature 2) left with wooden post; west view (photo no. 2473, UND 1983). B: Mound 1, left; Mound 2, right with crew person; east-southeast view (photo no. 3096, WCRM 1987).

Previous Archeological Research

The site was discovered in 1983 during an archeological survey of selected federal lands along the west bank of Lake Sharpe by personnel from the University of North Dakota (UND) under the direction of T. L. Steinacher (Toom and Picha 1984). This survey was conducted under a contractual agreement between UND and the U.S. Army Corps of Engineers (USACE), Omaha District (D. L. Toom, principal investigator; S. A. Ahler, co-principal investigator). UND investigations focused on the generation of information for purposes of site documentation, particularly the collection of map data and information on observed surface artifacts. The site was named "Initials" in the UND report in reference to the historic rock form component mentioned above. The interpretation of the mounds as human-made features was open to question at the time of the UND survey. In fact, UND researchers believed that the mounds were probably natural features, but a conservative approach on their part left the resolution of this question up to future testing at the site. UND researchers recommended that the mounds at 39LM149 be subjected to testing and further evaluation in order to determine their true character and archeological significance as a potential National Register site.

Present Investigations

The primary goal of the present investigations at the site is to act on the UND recommendations by testing the mounds and evaluating their potential eligibility for listing on the National Register of Historic places. The testing of the mounds was planned so as to avoid any undesirable disturbance to possible human remains, while at the same time collecting sufficient information to determine their structure, archeological content, and research potential. Excavations into the center of the mounds where burials would most likely be present were expressly avoided. Rather, test units were placed in the peripheries of the mounds and in areas beyond the mounds in order to produce natural and potentially cultural stratigraphic profiles for purposes of comparative analysis. It was also hoped that these peripheral excavations would produce artifactual data that would augment the stratigraphic analysis and reveal the cultural-historical affiliation of the mounds, if they did indeed prove to be cultural constructs. This essentially geoarcheological approach to the evaluation of the mounds assumes that natural and cultural (human-made) stratigraphic units would be sufficiently distinct to yield conclusive evidence that the mounds are either cultural or natural features.

Fieldwork

Three 1 X 1 m test units were excavated to a surface depth (sd) of 50 cm at the Windy Mounds site. Excavated volume for the site totals 1.5 m^3. Tests 1 and 2 were placed in the outer margins of Mounds 1 and 2, respectively. A small uncontrolled excavation or "sounding" was dug an additional 30-40 cm beneath the base of Tests 1 and 2 to provide better stratigraphic definition once the mound and submound stratigraphic units had been penetrated. Test 3 was placed approximately 20 m to the northwest of the mounds in a flat area of the ridge-top. The USACE Scope of Work (Appendix O) specifies the excavation of four test units at 39LM149. The three tests completed at the site were sufficient to meet all testing goals, however, so an arrangement was made with

Timothy R. Nowak (then the USACE South Dakota Field Archeologist) to shift one of the 39LM149 test units to 39LM146 where it could be applied more productively.

Excavation of the test units proceeded according to 10 cm arbitrary levels. All sediment matrix removed from the tests was dry screened through one-quarter inch mesh hardware cloth, with the exception of the matrix removed from the soundings in the bottoms of Tests 1 and 2. The matrix removed from these uncontrolled excavations was not screened. Field sorting of the fraction remaining in the screens was necessary to eliminate rather copious amounts of gravel. No attempt was made to collect surface artifacts at the site in view of the thorough surface inspection made by UND.

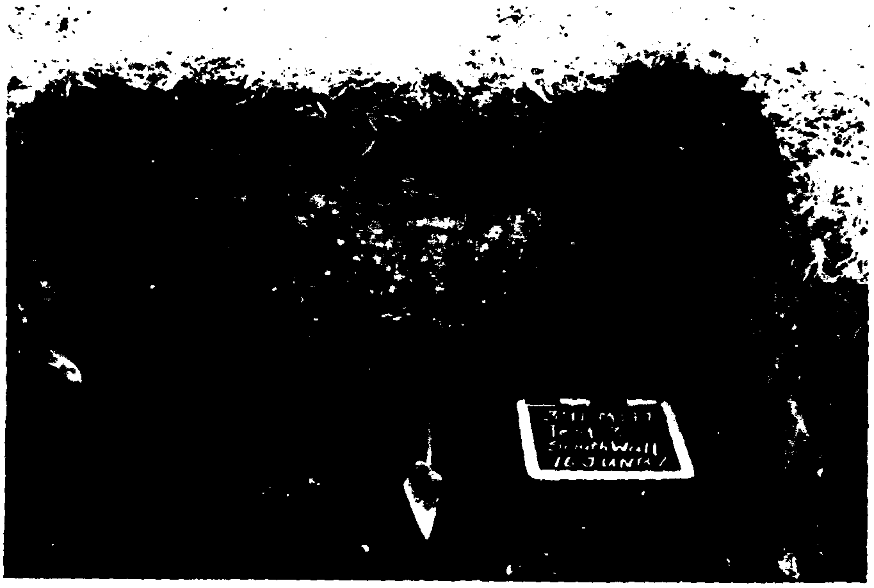
Geomorphic Context and Stratigraphy

The ridge-top location of the Windy Mounds site consists of a Pierre Shale bedrock hill covered by Late Pleistocene glaciofluvial gravels that are in turn mantled by a relatively thin layer of loess (silt loam). Coogan (1980) includes the site area in his Pierre Shale Terrain mapping unit, referred to here as the Missouri Breaks zone. The gravels include various lithic types commonly found in glacial drift in the area (e.g., granites, basalts, and quartzites), as well as numerous pieces of Pierre Shale. The loess cap contains quantities of small pebbles (<10%) that have been vertically displaced from the gravel layer, primarily as a result of the activities of burrowing animals. The loess cap is approximately 40 cm thick in areas surrounding the mounds. The thickness of the gravel layer is unknown, as is the depth to bedrock.

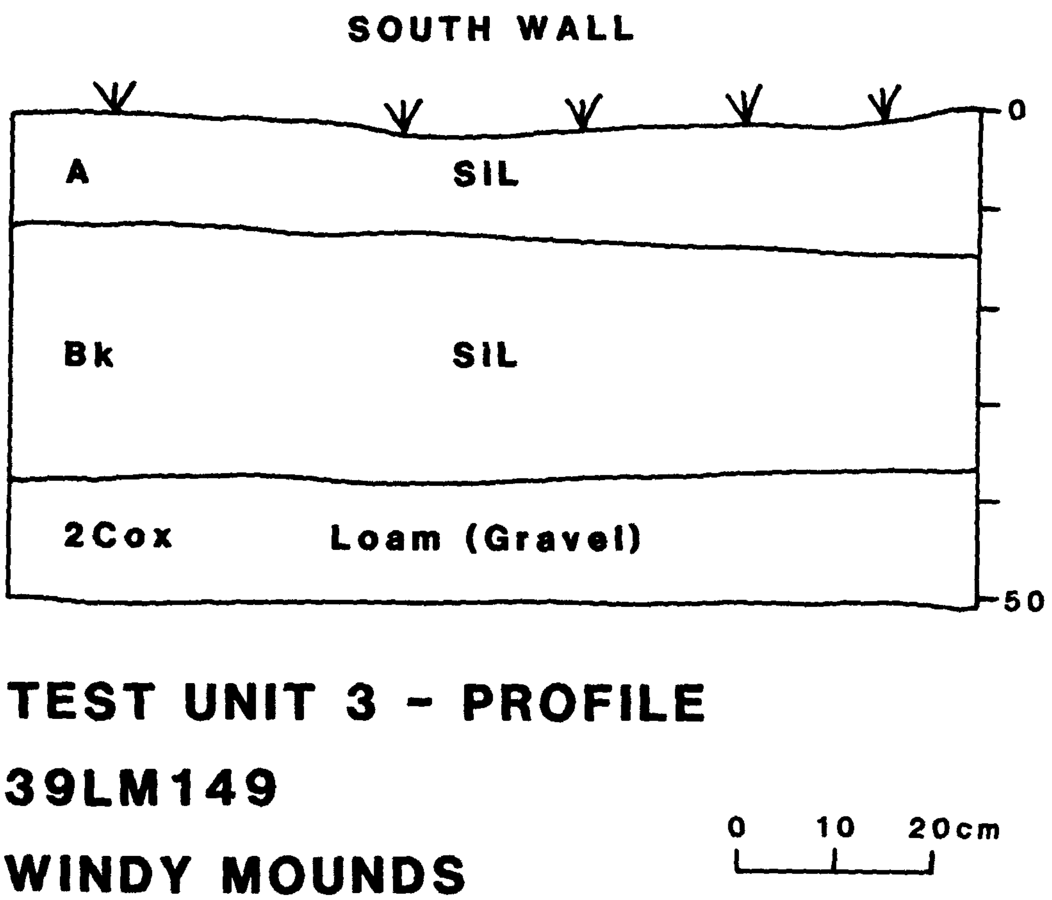
Profile Descriptions, Sediments, and Soils

Soil development is decidedly different in Tests 1 and 2 (Mounds 1 and 2) versus that in Test 3 (extra-mound context). There is every indication that the upper two stratigraphic units in Tests 1 and 2 represent anthropic horizons formed as a result of mound construction by prehistoric peoples. This is especially apparent when the soil horizons in the mound tests are compared to those in Test 3. Anthropic soils are a subdivision of the more inclusive group of soils known as anthrosols. Anthrosols are soils that are the product of or have been substantially modified by past human activities. Anthropic soils are anthrosols that were unintentionally created or altered by humans as a result of activities incidental to soil modification (Eidt 1985:155). The stratigraphy recorded in each test unit is discussed below, beginning with Test 3 which provides a natural stratigraphic sequence that is most informative when compared to the culturally derived and influenced sequences in Tests 1 and 2. Detailed soil descriptions for selected test unit profiles are are contained in Appendix C.

<u>Test 3 Stratigraphy</u>. The natural soil profile of the Windy Mounds ridge-top setting consists of a fairly standard A/Bk/2Cox sequence, as represented by the Test 3 profile (Figure 49). The surface A, which is noncalcareous, overlies a calcareous Bk horizon. The A and Bk horizons, which consist of silt loam (SiL), are formed in the loess cap covering the site area (ridge-



A



B

Figure 49. Profile Photo and Drawing of Test 3, Wind Mounds Site (39LM149). A: Profile photo of the south wall of Test 3 (photo no. 2944, WCRM 1987). B: Profile drawing of the south wall of Test 3.

top). Beneath the Bk at a depth of about 40 cm is a 2Cox horizon which corresponds to the upper surface of the glaciofluvial gravels that are present between the loess cap and Pierre Shale bedrock. The A and Bk horizons contain less than 10% estimated gravel, while the 2Cox horizon consists of more than 75% estimated gravel in a loam matrix.

Tests 1 and 2 Stratigraphy. The soil profiles of Mounds 1 and 2, as represented in Tests 1 and 2, are decidedly unnatural when compared to the profile in Test 3. Tests 1 and 2 exhibit an identical stratigraphic sequence (Figures 50-53). The two upper horizons in these tests are interpreted as anthropic A horizons, designated as A1(anth) and A2(anth). Both differ from the natural A horizon in Test 3 on the basis of certain key soil properties, and both are thought to be the direct result of prehistoric mound construction and subsequent surface soil formation on the mound.

The A1(anth) and A2(anth) horizons, which are silt loams, contain an estimated 25% gravel in the form of pebble- and cobble-sized inclusions. The estimated percentage of gravel in the anthropic A horizons of the mounds is much higher than that in the natural A horizon of Test 3 located beyond the mounds (ca. 25% versus <10%). Furthermore, many of the gravel inclusions in the anthropic horizons are larger than those in the A horizon of Test 3. The higher percentages and larger sizes of gravel in the A1(anth) and A2(anth) horizons are the primary criteria for interpreting these horizons as anthropic. Based on comparison with the natural A horizon in Test 3, such quantities and sizes of gravel in an eolian depositional unit cannot possibly be the result of natural processes. It is also worth noting that the anthropic horizons are calcareous, while the A horizon in Test 3 is essentially noncalcareous. This, too, reveals a different origin and soil formation history for these units.

A related consideration involves explaining the formation of the mounds vis-a-vis natural processes. It was originally thought that the mounds were comprised of glaciofluvial gravels, which would account for their formation by natural processes. However, it has been demonstrated that the mound fill is not of glaciofluvial origin, and it is extremely unlikely that such features could be formed by eolian processes in this setting, particularly in view of their relatively high gravel content. Moreover, it is inconceivable that any other recognized geomorphic processes could have produced these features. We are therefore left with the inescapable conclusion that the mounds are human-made constructs.

The gravel in the A1(anth) and A2(anth) horizons indicates that the fill for the mounds was taken from somewhere other than the ridge-top, possibly from the foot of the ridge where gravels would have accumulated as a result of hillslope erosion in conjunction with the development of an overthickened or cumulative A horizon (cf. Birkeland 1984:184-185). The fact that both anthropic horizons meet A requirements on the basis of color suggests that the earth for the mounds was taken entirely from off-site A horizons. The presumed cumulative A horizon at the base of the ridge is a likely possibility because this is where gravels would have accumulated as well through colluvial processes. Soil development would probably not have operated rapidly enough, nor have reached deep enough, to have transformed lighter-colored material from local B horizons into an A horizon in the mound fill. The separation of

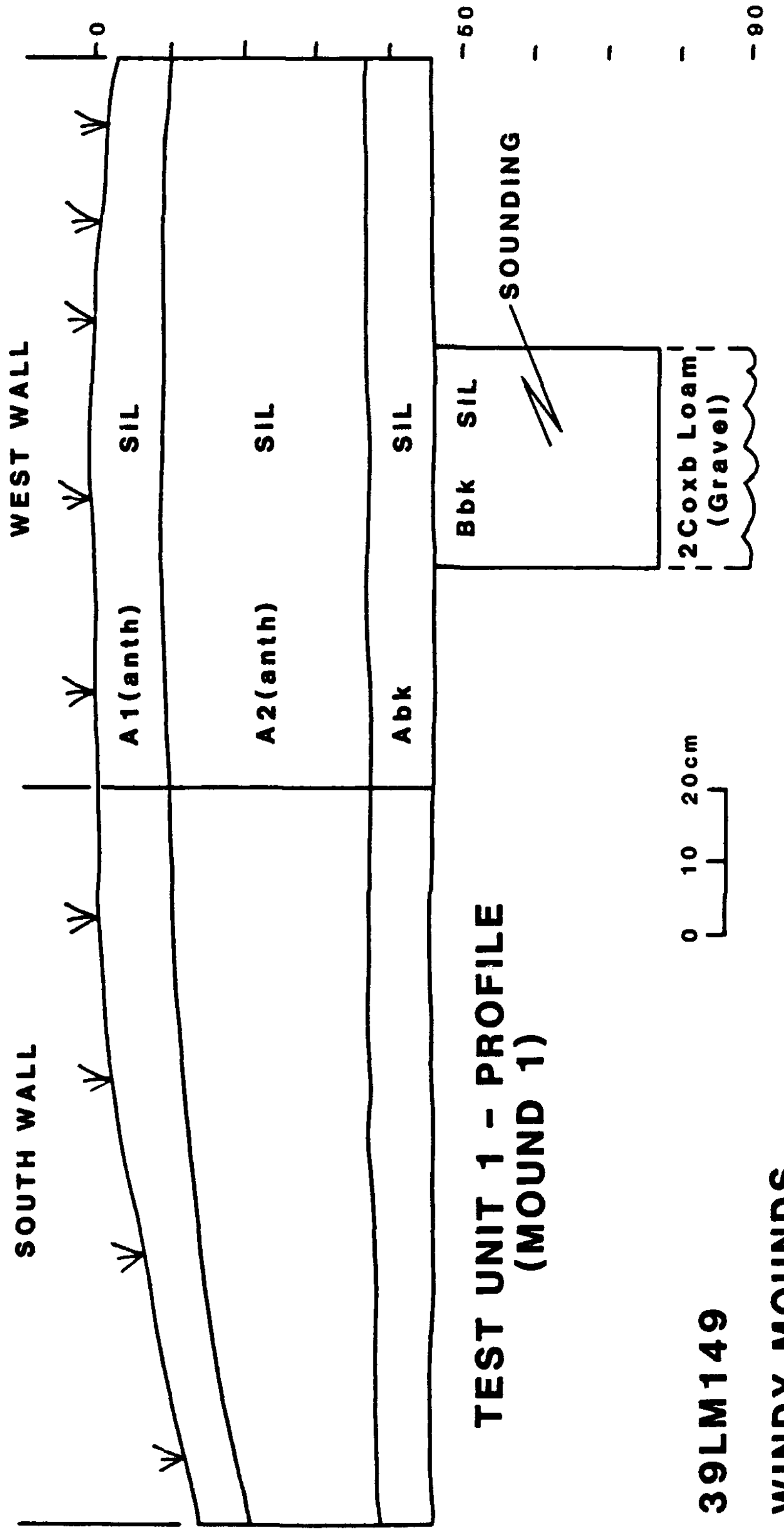


Figure 50. Profile Drawing of Test 1, Mound 1, Windy Mounds Site (39LM149).

A

B

Figure 51. Profile Photos of Test 1, Mound 1, Windy Mounds Site (39LM149).
A: South wall of Test 1, Mound 1 (photo no. 2951, WCRM 1987).
B: West wall of Test 1, Mound 1 (photo no. 2950, WCRM 1987).

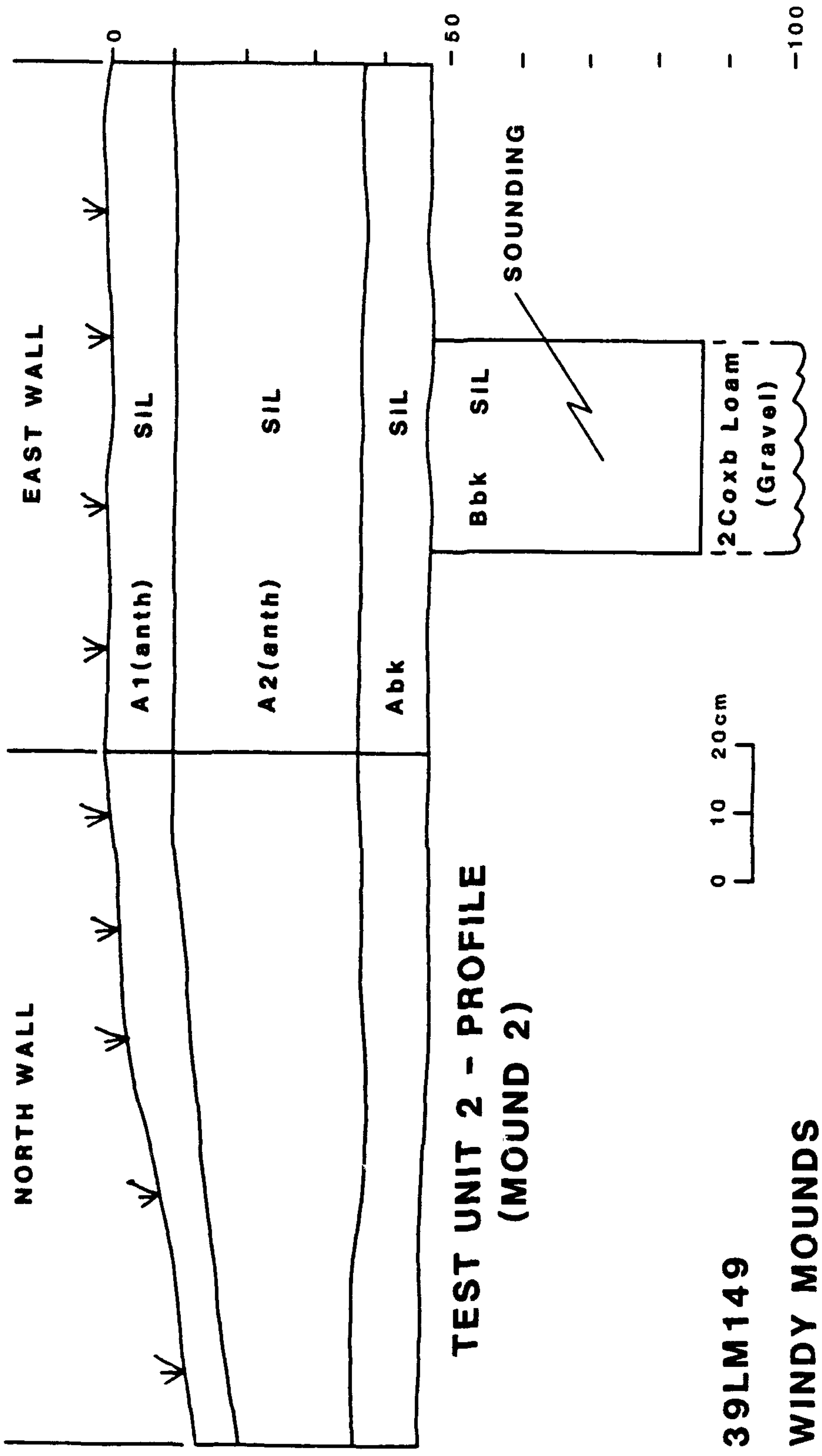


Figure 52. Profile Drawing of Test 2, Mound 2, Windy Mounds Site (39LM149).

A

B

Figure 53. Profile Photos of Test 2, Mound 2, Windy Mounds Site (39LM149).
A: North wall of Test 2, Mound 2 (photo no. 2946, WCRM 1987).
B: East wall of Test 2, Mound 2 (photo no. 2947, WCRM 1987).

the A1(anth) and A2(anth) horizons is very subtle, and based on the formation of a surface A horizon (A1(anth)) or "sod layer" on the bulk of the mound fill (A2(anth)) after its construction.

Beneath the anthropic A horizons there is a return to a more natural soil profile, but soil formation in these submound horizons has been influenced by burial by the mounds. The horizon immediately beneath the A2(anth) is a calcareous buried A (Abk) (Figures 50 and 52). This unit is correlated with the surface A horizon in Test 3 because it is a silt loam containing only about 10% estimated gravel consisting of pebble sized inclusions. Burial of the Abk is by the mounds, and the visible accumulation of carbonate in the Abk is a direct result of the construction of the mounds on top of this former surface soil. The Bbk horizon beneath the Abk correlates with the Bk horizon in Test 3. It, too, is a silt loam exhibiting less than 10% estimated gravel of pebble size, but its color is visibly yellower than that of the Bk in Test 3 (5Y5/3 dry versus 2.5Y6.5/2 dry). The color differential between the two B horizons is also function of the burial of the Bbk by the mounds and the influence of this burial on the development of the Bbk. The 2Coxb horizon beneath the Bbk is the same as the 2Cox in Test 3; its properties have been little affected by burial beneath the mounds.

Cultural Associations

A number of lithic artifacts and some ceramic body sherds were recovered from the A1(anth) and A2(anth) horizons in Tests 1 and 2. The presence of artifacts in these horizons further strengthens their interpretation as human-made mound fill. A few lithic artifacts were also recovered from the submound Abk horizon. The Abk horizon is interpreted as the former ground surface upon which the mounds were built, and the presence of artifacts in this horizon lends additional weight to this inference. Of particular significance is a small side-notched arrow point found near the surface of the Abk in Test 2 (Mound 2). The specimen most closely resembles the Tompkins Side/Corner-Notched variety of the Prairie Side-Notched type (Kehoe 1966, 1973). The context of the arrow point and the estimated age of Prairie Side-Notched types (ca. A.D. 800) indicates the mounds were built during the late Plains Woodland period. A late Plains Woodland affiliation is entirely consistent with the interpretation of the mounds as human-made tumuli.

A few lithic artifacts were also found in Test 3 from 10-20 cm sd. This depth corresponds to the base of the A horizon in Test 3, which is correlated with the Abk horizon identified beneath the mounds on these basis of artifactual associations.

Archeological Components, Radiocarbon Dates, and Analytic Units

On the basis of this research, and previous research conducted at the site by UND, the Windy Mounds site is known to contain two and possibly as many as three archeological components:

1. Recent, Historic (ca. late A.D. 1800s-present);

2. Late Plains Woodland (ca. A.D. 600-1000); and

3. Unknown Prehistoric.

The recent component consists of the historic rock forms discussed previously. The unknown prehistoric component is represented by the sparse lithic scatter, also identified above. The lithic scatter likely reflects sporadic use of the site for purposes of collecting lithic raw materials from exposed glaciofluvial gravels. This component could potentially relate to most any prehistoric period, however, much of the lithic debris probably reflects use of the site area by late Plains Woodland peoples. The late Plains Woodland component, the only component judged to be of archeological significance, consists of the two human-made mounds and associated artifactual remains.

No materials suitable for radiocarbon dating were recovered in the test excavations at Windy Mounds. The identification and age of the late Plains Woodland component are based on the presence of the single Prairie Side-Notched arrow point, its unequivocal association with the mounds, and the estimated temporal parameters of late Plains Woodland sites in the Lake Sharpe area.

Artifact descriptions and analyses are based on three archeological context units defined for the site. These are (1) mound fill levels, (2) submound levels, and (3) extra-mound general levels. The mound fill and submound levels are represented in Tests 1 and 2, which were excavated into Mounds 1 and 2, respectively. The extra-mound general levels are represented in Test 3.

Features

The only features recorded at the site include the two earthen mounds. These were originally designated as Features 1 and 2 by UND; they are herein designated as Mounds 1 and 2. No other features were present in the test excavations completed at the site. However, it is highly probable that other features such as burial pits and human skeletal remains are present in or beneath the mounds considering their late Plains Woodland affiliation and what is known about the content of Plains Woodland burial mounds in the study region (e.g., Neuman 1960, 1961a, 1961b, 1975; Toom 1984b; Wood 1960).

Native Ceramics

The native ceramic sample consists entirely of eight G2-G3 body sherds found in the upper 20 cm of Test 2 in the fill of Mound 2 (Table 35). Surface treatments were recorded for all eight specimens so as to increase the sample size beyond the four G2 sherds. Four body sherds exhibit plain/smoothed surface treatment, two are cord-roughened, and two are decorated with trailed lines. A mean maximum thickness value of 5.5 ± 1.0 mm was calculated for the four G2 specimens.

Table 35. Native Ceramic Body Sherd Size Grade Data by Test Unit and Context, Windy Mounds Site (39LM149).

Context/ Test Unit		Size Grade Grade 1	Grade 2	Grade 3	Total
Mound Fill					
1	n	-	-	-	-
	%	-	-	-	-
2	n	-	4	4	8
	%	-	50.0	50.0	100.0
Submound					
1	n	-	-	-	-
	%	-	-	-	-
2	n	-	-	-	-
	%	-	-	-	-
Extra-Mound					
3	n	-	-	-	-
	%	-	-	-	-
Total	n	-	4	4	8
	%	-	50.0	50.0	100.0

The ceramic sample from the site is too small and generic to allow a specific interpretation. The specimens most closely resemble lower body and shoulder sherds from Initial Middle Missouri-like vessels (globular jars). This, and their near-surface association, suggests that they may have been deposited on the mound as a result of activities in the area by Initial Middle Missouri peoples. However, such an assessment does not necessarily preclude an actual late Plains Woodland affiliation, which is the interpretation preferred here.

Stone Tools

Chipped stone tools recovered from test excavations at the Windy Mounds site total 21 individual specimens. No pecked/ground stone tools are present in the sample. Descriptive categories represented include patterned notched bifaces (n=1), unpatterned bifaces and nonbipolar cores and core-tools (n=5), other retouched and modified flakes (n=7), and bipolar cores/tools (n=8). Nineteen tools are single function implements, and two are double function, resulting in a total of 23 functional tool occurrences.

Tool Technology

Technological classification of the Windy Mounds stone tools is summarized according to test unit and archeological context in Table 36. Although the sample is small, it is clearly dominated by unpatterned chipped stone forms (n=22). Unpatterned flake tools are the most common technological form (n=9), followed closely by bipolar core-tools (n=8), irregular unpatterned bifaces (n=4), and nonbipolar cores-tools (n=1). The arrow point is the only patterned tool form in the assemblage (small thin patterned biface). Most of the tools were found in the fill of the mounds (n=17), particularly that of Mound 2 (n=13). These probably represent tools that were discarded or lost in the fill used to construct the mounds. Another five tools are from submound contexts, and only one is from an extra-mound context.

Technology and Lithic Raw Materials

Lithic raw material type frequency data for those technological classes represented in the Windy Mounds assemblage are presented in Table 37. Only six different raw material types were identified, all of which belong to the local resource group. The most prevalent local lithic types in the tool sample are clear/gray chalcedony (30.4%), jasper/chert (26.1%), and porous quartzite (17.4%). The exclusive presence of local lithic types in the tool sample is not unusual considering that the assemblage is overwhelmingly dominated by unpatterned technological forms.

Function and Use-Phase

Data on the functional classification of the stone tools from Windy Mounds according to use-phase class are contained in Table 38. The tool sample from the site shows a limited range of functions. Most were probably used to manufacture and maintain other tool forms, particularly wood and/or bone digging implements, that were used in mound construction. The general functional groups and most of the specific functional classes represented in the Windy Mounds assemblage are discussed in some detail in the Antelope Dreamer site report. Selected examples are illustrated by functional class in Figure 54.

The projectile point found immediately beneath Mound 2 (submound context) is of particular interest (Figure 54A). It is a small, side-notched arrow point that most closely resembles the Tompkins Side/Corner-Notched variety of

Table 36. Stone Tool Technological Class Data by Test Unit and Context, Windy Mounds Site (39LM149).

Technological Class		Mound Fill Test 1	Mound Fill Test 2	Submound Test 1	Submound Test 2	Test 3	Total
1 Small Thin Patterned Bifaces	n	-	-	-	1	-	1
	%	-	-	-	25.0	-	4.3
2 Large Thin Patterned Bifaces	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
3 Irregular Unpatterned Bifaces	n	1	1	1	1	-	4
	%	25.0	7.7	100.0	25.0	-	17.4
4 Patterned Flake Tools	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
5 Unpatterned Flake Tools	n	3	4	-	2	-	9
	%	75.0	30.8	-	50.0	-	39.1
6 Thick Bifacial Core-Tools	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
7 Nonbipolar Cores-Tools	n	-	-	-	-	1	1
	%	-	-	-	-	100.0	4.3
8 Bipolar Core-Tools	n	-	8	-	-	-	8
	%	-	61.5	-	-	-	34.8
9 Unpatterned Pecked/Ground Stone Tools	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
10 Patterned Pecked/Ground Stone Tools	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
Total	n	4	13	1	4	1	23
	%	100.0	100.0	100.0	100.0	100.0	99.9

Table 37. Stone Tool Raw Material Type Data by Technological Class, Windy Mounds Site (39LM149).

Resource Group and Raw Material Type		Technological Class 1	3	5	7	8	Total n	%
Local Resource Group								
04 Solid Quartzite		-	-	1	-	-	1	4.3
05 Porous Quartzite		-	1	2	1	-	4	17.4
06 Jasper/Chert		-	1	2	-	3	6	26.1
08 Clear/Gray Chalcedony		1	1	2	-	3	7	30.4
09 Yellow or Light Brown Chalcedony		-	-	-	-	2	2	8.7
13 Basaltic		-	1	2	-	-	3	13.0
Total	n	1	4	9	1	8	23	99.9
	%	4.3	17.4	39.1	4.3	34.8	99.9	

the Prairie Side-Notched type (Kehoe 1966, 1973), as discussed above. The notching occurs very low on the base, giving the base an eared appearance. It is also reminiscent of the preceding Avonlea point type, but it lacks the fine flaking that is characteristic of most Avonlea forms (Kehoe 1966, 1973; Kehoe and McCorquodale 1961). The context of the arrow point and the estimated age of the Prairie Side-Notched type (ca. A.D. 800) indicates the mounds are of late Plains Woodland affiliation. The construction date of the mounds is estimated at A.D. 600-1000 based on the late Plains Woodland time frame in the Lake Sharpe area. The specimen is complete, manufactured of clear/gray chalcedony, and it exhibits light patination on one face. It was either lost just prior to mound construction, or it was, perhaps, deposited beneath the mound fill as an offering. The following measurements were recorded for this specimen:

Computer No.: 030001 (Figure 54A)
Weight: 0.3 g
Maximum Length: 16.4 mm
Maximum Thickness: 2.3 mm
Maximum Blade Width: 13.8 mm
Maximum Base Width: 12.9 mm
Distance to Center of Notches from Base: 3.0 mm

Table 38. Stone Tool Functional Class Data by Use-Phase Class, Windy Mounds Site (39LM149).

General Functional Group/ Specific Functional Class		Use-Phase Class 1	2	3	4	Total
1. Projectile Points						
01 Projectile Point		-	-	1	-	1
4. Jagged Expedient Cutting Tools						
08 Expedient general purpose cutting tool		-	-	-	4	4
5. Prepared or Regularly Modified Unpatterned Flake Tools						
23 Retouched or utilized flake used on variable material		-	-	3	2	5
6. Unprepared or Irregularly Modified Unpatterned Flake Tools						
22 Utilized flake used to saw or slice hard material		-	-	4	-	4
10. Cores and Potential Cores						
21 Core		-	-	-	1	1
31 Tested raw material		-	-	-	1	1
Subtotal		-	-	-	(2)	(2)
12. Bipolar Tools or Potential Tools						
25 Core/punch/wedge/chisel		-	-	1	5	6
26 Punch/wedge/chisel		-	-	1	-	1
Subtotal		-	-	(2)	(5)	(7)
Total	n	-	-	10	13	23
	%	-	-	43.5	56.5	100.0

Figure 54. Photos of Chipped Stone Tools, Windy Mounds Site (39LM149).

A: Projectile (arrow) point (class 01). B: Retouched or utilized flake used on variable material (class 23). C: Combination utilized flake used to saw or slice hard material (class 22) and retouched or utilized flake used on variable material (class 23). D: Utilized flake used to saw or slice hard material (class 22). E-G: Bipolar core/punch/wedge/chisel (class 25). H: Bipolar punch/wedge/chisel (class 26). I: Expedient general purpose cutting tool (class 08).

Chipped Stone Flaking Debris

A total of 39 pieces of G2-3 flaking debris was recovered from the test excavations at Windy Mounds (Table 39). Most of the flaking debris was found in the mound fill. Only five flakes are from submound contexts, with another five from the extra-mound context. Chipped stone flaking debris raw material type data differs little from that recorded for the stone tools (Table 40). Exceptions include the identification of two additional local lithic types (quartz and other quartzite), and the presence of two G3 flakes of nonlocal Knife River flint from the northern resource group. The flaking debris sample is too limited to permit reliable interpretations of chipped stone tool technological operations performed at the site.

Table 39. Chipped Stone Flaking Debris Size Grade Data by Test Unit and Context, Wind Mounds Site (39LM149).

Context/ Test Unit		Size Grade Grade 1	Grade 2	Grade 3	Total
Mound Fill					
1	n	-	3	15	18
	%	-	16.7	83.3	100.0
2	n	-	1	10	11
	%	-	9.1	90.9	100.0
Subtotal	n	-	4	25	29
	%	-	13.8	86.2	100.0
Submound					
1	n	-	-	-	-
	%	-	-	-	-
2	n	-	2	3	5
	%	-	40.0	60.0	100.0
Extra-Mound					
3	n	-	3	2	5
	%	-	60.0	40.0	100.0
Total	n	-	9	30	39
	%	-	23.1	76.9	100.0

Table 40. Chipped Stone Flaking Debris Raw Material Type Data by Size Grade, Windy Mounds Site (39LM149).

Resource Group and Raw Material Type		Size Grade			Total	
		Grade 1	Grade 2	Grade 3	n	%
<u>Local Resource Group</u>						
04 Solid Quartzite		-	1	2	3	7.7
05 Porous Quartzite		-	-	8	8	20.5
06 Jasper/Chert		-	6	7	13	33.3
08/09/10 Various Chalcedonies		-	1	6	7	18.0
13 Basaltic		-	1	-	1	2.6
16 Quartz		-	-	3	3	7.7
35 Other Quartzite		-	-	2	2	5.1
Subtotal, Local Resour		-	9	28	37	94.9
<u>Northern Resource Group</u>						
28 Knife River Flint		-	-	2	2	5.1
Total	n	-	9	30	39	100.0
	%	-	23.1	76.9	100.0	

Vertebrate Fauna

The vertebrate fauna sample from Windy Mounds consists entirely of 2 g of unmodified and essentially unidentifiable G3 bone debris. The mound fill of Test 2 (Mound 2) yielded 1 g of bone; the other gram of bone was recovered from the extra-mound context of Test 3. None of the bone shows signs of burning, and none is specifically identifiable as human (Appendix B; Wheeler, this report).

Artifact Distributions and Densities

Data on the distribution and density of major prehistoric artifact classes at the Windy Mounds site are presented in Table 41. Density data are stated in terms of numbers (n) or weights (wt) of artifacts per m^2 for each test unit and archeological context as well as for the site as a whole. It is immediately obvious that the artifact inventory is very limited, which is expected of a special-purpose site. The majority of the materials that are represented come from the mound fill. These artifacts, most of which are stone tools and flaking debris, are interpreted as lost or discarded items that are a by-product of mound construction activities. Relatively few artifacts were recovered from submound and extra-mound contexts. Nevertheless, this assessment is undoubtedly biased by the limited excavations conducted at the site and the purposeful placement of test units away from the centers of the mounds where burials are most likely present. Most artifacts in Plains Woodland mounds are associated with the burials (i.e., grave goods). Complete excavation of the mounds would probably reveal that the majority of the artifactual remains at the site are to be found in submound burial pits.

Discussion and Conclusions

Combined geological and archeological evidence indicates beyond all reasonable doubt that the mounds at site 39LM149 are human-made features. The recovery of the a late Plains Woodland arrow point (Prairie Side-Notched type) from the former ground surface just beneath Mound 2 demonstrates a late Plains Woodland cultural affiliation. A construction date of A.D. 600-1000 is suggested for the mounds based on the estimated age of the point type (ca. A.D. 800) and the late Plains Woodland time frame in the project area. The actual presence of human burials beneath the mounds was not confirmed, but there is every reason to believe that such interments do exist because Plains Woodland mounds in the study region invariably functioned as tumuli. The presence of a depression near the center of Mound 2, probably representing an old excavation, suggests that this feature was disturbed by relic hunters at some time in the past. The depression is well grassed over indicating the disturbance is not recent. The USCGS bench mark at the site is set on the southern edge of this depression. Mound 1 appears to be completely intact and undisturbed except for the peripheral test excavation completed as part of these investigations, and minor disturbance from the dirt road that crosses the southern periphery of the mound.

Table 41. Major Prehistoric Artifact Class Distribution and Density Data by Test Unit and Context, Windy Mounds Site (39LM149).

Context/ Test Unit	Rim Sherds	Body Sherds	Stone Tools	Flaking Debris	FCR (g)	Unmodified Bone (g)
Mound Fill						
1	-	-	4	18	-	-
2	-	8	13	11	-	1
Subtotal	-	8	17	29	-	1
n/wt/m^2	-	4.0	8.5	14.5	-	0.5
Submound						
1	-	-	1	-	-	-
2	-	-	4	5	-	-
Subtotal	-	-	5	5	-	-
n/wt/m^2	-	-	2.5	2.5	-	-
Extra-Mound						
3	-	-	1	5	-	1
Subtotal	-	-	1	5	-	1
n/wt/m^2	-	-	1	5	-	1
Total	-	8	23	39	-	2
n/wt/m^2	-	2.7	7.7	13.0	-	0.7

VIII. BETTY BITE OFF SITE (39LM156)

Site Description and Background

Site 39LM156, herein named the Betty Bite Off site, is situated on the northwest side of a small bay off Lake Sharpe formed at the mouth of an ephemeral stream. The site is located a short distance upstream from the embayment of Medicine Creek and the Iron Nation Recreation Area (Figure 1). The Gilman site (39LM226), an Initial Middle Missouri earthlodge village, is located on the southeast side of the small bay directly across from 39LM156 (Lehmer 1971; Steinacher 1981; Steinacher and Toom 1985). The site is named after Betty Bite Off, a Lower Brule Sioux Indian, who apparently homesteaded the land (Toom and Picha 1984:Appendix C, Table C-7). It consists of a large, oval-shaped depression filled with logs, sparsely scattered historic surface debris, and as many as three buried prehistoric occupation horizons (Toom and Picha 1984; Picha and Toom 1984). The site is subject to shoreline erosion from Lake Sharpe, and it appears that a substantial portion of it has been completely destroyed by erosion. The remaining site area covers as much as 0.4 ha (1.0 acre), as nearly as can be determined by the limited testing reported here. The elevation of the site ranges from about 1420-1450 ft amsl.

Previous Archeological Research

The site was discovered and recorded in 1983 by an archeological survey team from the University of North Dakota (UND) under the direction of T. L. Steinacher (Toom and Picha 1984). The survey was conducted by UND under a contractual agreement with the U.S. Army Corps of Engineers (USACE), Omaha District, as part of an archeological reconnaissance of selected federal lands along the west bank of the Lake Sharpe project area (D. L. Toom, principal investigator; S. A. Ahler, co-principal investigator). Work at the site by UND focused on the collection of site documentation information, particularly map data and information on exposed artifactual remains.

The only feature recorded at the site by UND consists of a large, oval-shaped depression filled with logs (Figure 55) The depression is obviously recent, perhaps representing a historic dugout structure. A local informant (Arthur J. Gilman) stated that, to the best of his knowledge, the site had not been occupied historically, and the "big hole full of logs" was not part of a structure (Toom and Picha 1984:Appendix C, Table C-7).

UND personnel also noted the presence of as many as three weak, buried soil horizons with associated artifactual remains exposed in the Lake Sharpe cutbank at the site. These soil horizons were observed at a depth of about 75-100 cm in the cutbank. Artifactual materials associated with the buried horizons included charcoal, burned earth, and bone. Artifacts exposed in the cutbank did not appear to extend for any great distance above the mouth of the bay (Figure 55). A few lithic and bone specimens were also found on a rodent burrow on the site surface (Picha and Toom 1984). Erosion of the cutbank by wave action from Lake Sharpe was active and ongoing at the time of the UND investigations. The buried horizons at the site were recommended for testing and evaluation.

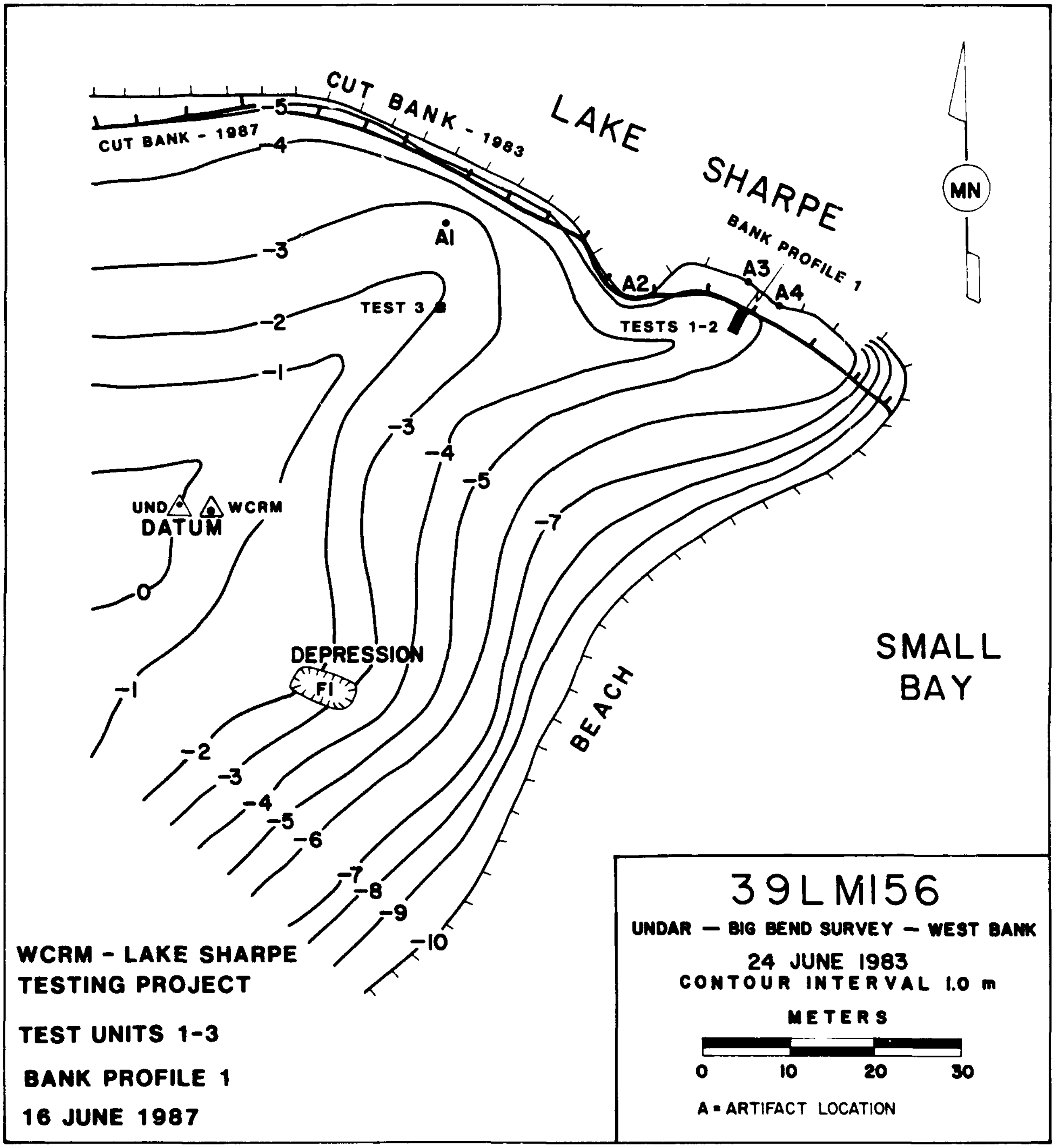


Figure 55. Contour Map of the Betty Bite Off Site (39LM156).

Present Investigations

The purpose of these investigations is to act on the UND recommendations by testing and evaluating the buried cultural horizons at the site, which are presumed to be prehistoric. The historic remains at the site do not seem to be archeologically significant, and they were not purposely investigated further.

Fieldwork

Three 1 X 1 m test units were excavated at Betty Bite Off into and through the buried cultural horizons. Test unit placement was judgmental and based on the perceived need to cover as much of the site area as possible within the limits specified by the USACE Scope of Work (Appendix O), while at the same time attempting to maximize artifact recovery. Tests 1 and 2 were combined to form a 1 X 2 m excavation that was placed near the Lake Sharpe cutbank where scattered artifacts exposed in the cutbank appeared to be the most numerous (Figure 55). It was thought that a 1 X 2 m excavation at this location would provide maximum artifact recovery. Tests 1-2 were excavated to a depth of 130 cm beneath the present ground surface (surface depth or sd). The cutbank opposite Tests 1-2 was also cleaned and profiled down to the beach level of Lake Sharpe. No attempt was made to recover artifacts from the profile excavation, designated Bank Profile 1. Test 3 was placed approximately 35 m to the west of Tests 1-2 so as to explore the artifactual content of the site away from the cutbank exposure. Test 3 was excavated to a depth of 90 cm sd. Excavated volume at the site totals 3.5 m^3.

All soil matrix removed from the test excavations was screened over one-quarter inch mesh hardware cloth. All materials remaining in the screens were retained for laboratory analysis. No water screen samples (one-sixteenth inch mesh window screen) were taken at the site. The collection of surface artifacts was not attempted in view of the deeply buried nature of the prehistoric remains and the thorough surface inspection that was made of the site area by the UND survey crew.

In addition to mapping the location of the test units at the site, the edge of the Lake Sharpe cutbank was also remapped in order to determine the extent of recent cutbank erosion. This exercise revealed that as much as three meters of the cutbank had been lost to erosion in the four years since the site was first documented (Figure 55). Recent cutbank erosion was most extensive in the lower part of the site just upstream from the mouth of the small bay. Unfortunately, this is also the part of the site where artifact densities would seem to have been the highest.

Geomorphic Context and Stratigraphy

The Betty Bite Off site is located in the outer margin of the MT-2 terrace adjacent to Lake Sharpe (Coogan 1980). More specifically, the site is situated in the upper portion of the MT-2 terrace scarp (slope), where the MT-2 began to slope downward to the stream channel and the Missouri bottomlands (Figures 55 and 56). The submerged channel of an ephemeral stream, now consisting of a small bay off Lake Sharpe, borders the site to the southeast. Lake Sharpe forms the northeastern margin of the site, and the tread of the MT-2 terrace is present to the southwest. Wave action from Lake Sharpe has truncated the MT-2 scarp at the site forming a high cutbank exposure of the terrace. Erosion of the Lake Sharpe shoreline at the site continues to be active.

The site can be conveniently divided into two areas on the basis of topography for purposes of description. The lower part of the site consists of a moderately to steeply sloping spur of land projecting to the northeast from the main MT-2 body into Lake Sharpe (Figure 56A). This area consists of the MT-2 scarp proper. The upper part of the site, located in the vicinity of the site datum, occupies the crest of the MT-2 scarp (Figure 56B). Tests 1-2 were placed in the lower part of the site in the MT-2 scarp. Test 3 was placed in the upper part of the site just below crest of the scarp (Figures 55 and 56). Most artifactual remains were observed in the Lake Sharpe cutbank exposure in the lower part of the site.

Two primary depositional units were observed in the cutbank exposure at the site (Figures 57 and 58A). The upper unit consists of loess (silt loam, SiL) derived from materials in the former Missouri River channel and deposited at the site as a result of eolian processes. The lower unit consists of alluvium. The alluvium fines upward, consisting of clayey overbank deposits (silty clay loam, SiCL) near its surface, an intermediate unit of low energy sandy channel deposits (sandy loam, SL), and a basal unit of high energy gravelly channel deposits in a sandy loam matrix. The gravel content of the lower alluvium is estimated at about 75%, consisting of pebble to boulder sized pieces. The gravelly alluvium is likely of Late Wisconsinan age.

Profile Descriptions, Sediments, and Soils

The loess depositional unit is of primary interest to these investigations because it contains the buried cultural horizons observed in the Lake Sharpe cutbank. The more or less constant addition of loess parent material at the site has produced what is referred to as a cumulative soil profile (Birkeland 1984:184-185). This phenomenon was also observed at the Antelope Dreamer site even though the geomorphic setting of the two sites is quite different. Cumulative soil profiles are those that receive influxes of parent material while pedogenesis is ongoing; in essence, soil formation and deposition occur simultaneously at the same location. An overthickened or cumulative A horizon, one that is gradually buried during soil formation, is a common feature of cumulative soils. Cumulative A horizons are characteristic of the upper solum of the loess mantling the MT-2. A general cumulative A horizon as much as 1 m thick is present in the upper portion of the loess cap at the site. The soil horizons in the loess cap at the site exhibit a general A/B sequence above the alluvium. Detailed soil descriptions for the profile

A

B

Figure 56. Photos of the Betty Bite Off Site (39LM156). A: Lower site area and location of Tests 1-2 with crew person, east-northeast view (photo no. 2912, WCRM 1987). B: Upper site area and location of Test 3 with crew person; Tests 1-2 to the right by dirt pile; east-northeast view (photo no. 2919, WCRM 1987).

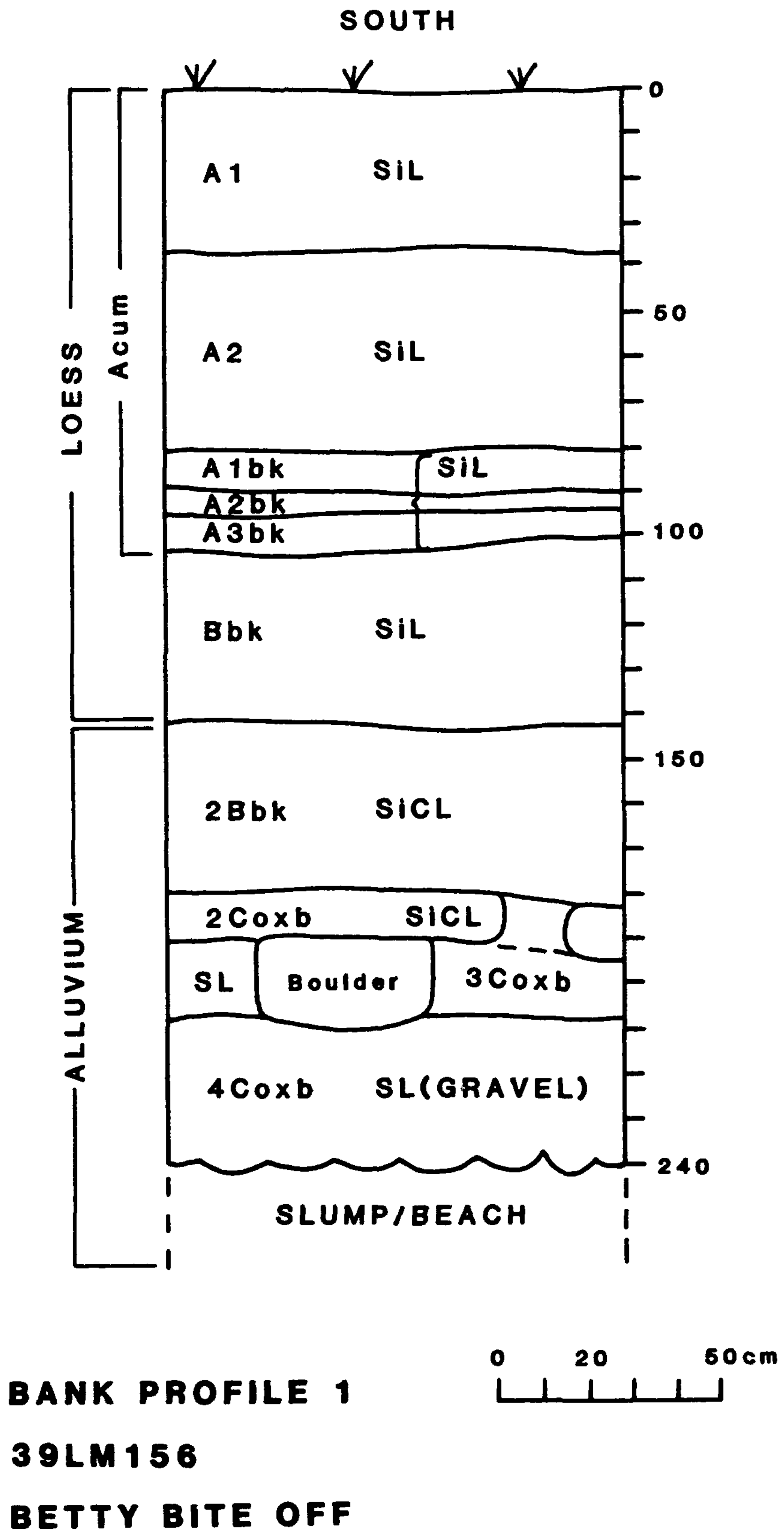


Figure 57. Profile Drawing of Bank Profile 1, Betty Bite Off Site (39LM156).

Figure 58. Profile Photos of Bank Profile 1 and Test 3, Betty Bite Off Site (39LM156). A: Bank Profile 1, south view (photo no. 2917, WCRM 1987). B: West wall of Test 3 (photo no. 2953, WCRM 1987).

discussions that follow can be found in Appendix C. Soil horizon nomenclature generally follows Birkeland (1984).

Bank Profile 1. Bank Profile 1 consists of a 1 m wide area of the Lake Sharpe cutbank that was cleaned and profiled from the surface of the cutbank down to the beach (Figures 57 and 58A). It offers an extensive stratigraphic exposure of the truncated MT-2 scarp and serves as the stratigraphic control for the test excavations at the site. The alluvial units, which do not directly concern us here, were described in general terms above. This discussion will focus on the soils observed in the loess unit.

The loess cap in Bank Profile 1 exhibits a general cumulative A horizon to a depth of about 105 cm. A Bbk horizon was recorded beneath the cumulative A extending to a depth of about 140 cm where the alluvium begins. From top to bottom, the cumulative A is subdivided into A1, A2, A1bk, A2bk, and A3bk horizons (Figure 57). The closely spaced sequence of Abk horizons is only about 20-25 cm thick and represents a former (buried) surface soil that apparently corresponds to the three buried "cultural horizons" identified at the site by the UND survey team. The A1bk exhibits scattered charcoal flecking and bone debris. This horizon appears to be the one from which most artifactual materials observed in the cutbank have been derived. The A1 and A2 horizons that cover the Abk horizons represent relatively recent (ca. last 500 years) accumulations of loess parent material that have been gradually transformed into A horizons as a result of the accretional processes of pedogenesis attributed to cumulative soil profiles.

Tests 1 and 2. Tests 1-2, combined into a 1 X 2 m excavation, were dug near the edge of the cutbank directly opposite Bank Profile 1 (Figures 55 and 56). They were excavated to a depth of 130 cm sd through the Abk and into the upper portion of the Bbk (Figures 59 and 60). The three distinct units of the general Abk horizon recorded in Bank Profile 1 (A1bk/A2bk/A3bk) were not recognizable in the profile of Tests 1-2. Rather, this unit appears as an undifferentiated Abk horizon. The upper portion of the Abk in Tests 1-2 exhibits scattered charcoal flecking and bone debris as did the A1bk of Bank Profile 1.

Test 3. Test 3, a 1 X 1 m unit, was dug into the outer margin of the MT-2 tread in the upper part of the site (Figures 55 and 56B). It exhibits the same stratigraphic sequence as Tests 1-2 to a depth of 90 cm (Figure 61 and 58B). The general cumulative A horizon is not quite as thick in this part of the site, extending to a maximum depth of about 85 cm. The A1 and A2 horizons extend to a depth of about 70 cm in Test 3. The Abk horizon was recorded from about 70-85 cm, overlying the Bbk.

Cultural Associations

Vertical artifact distributions indicate two prehistoric occupation zones or horizons at the site. Disturbance by burrowing animals and other natural agencies has blurred the stratigraphic definition of these occupation horizons to some extent, but it is possible to make definite correlations with certain natural stratigraphic units. The first prehistoric occupation consists of an

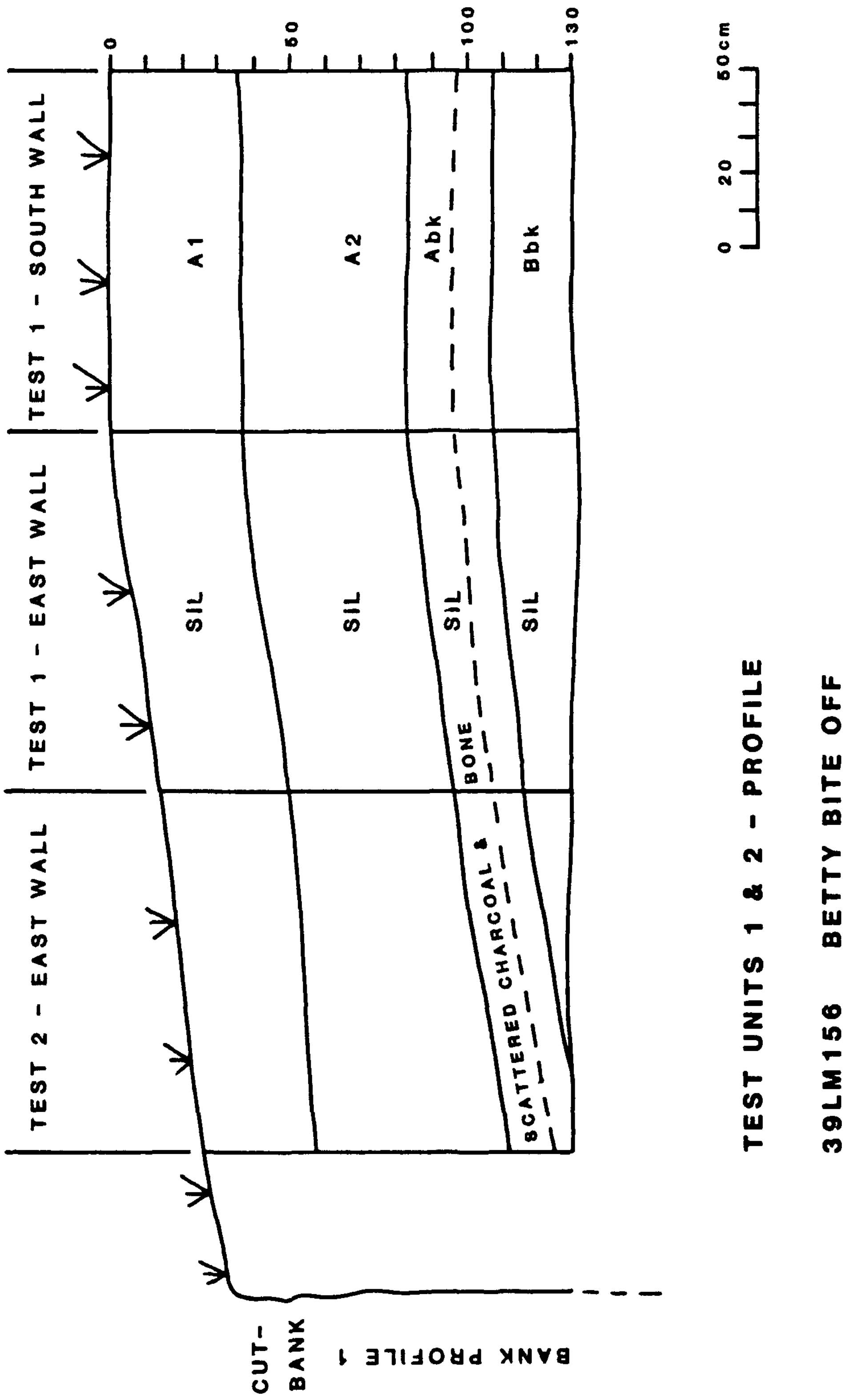


Figure 59. Profile Drawing of Tests 1-2, Betty Bite Off Site (39LM156).

Figure 60. Profile Photos of Tests 1-2, Betty Bite Off Site (39LM156).
A: East wall of Tests 1-2 (photo no. 2915, WCRM 1987).
B: South wall of Test 1 (photo no. 2913, WCRM 1987).

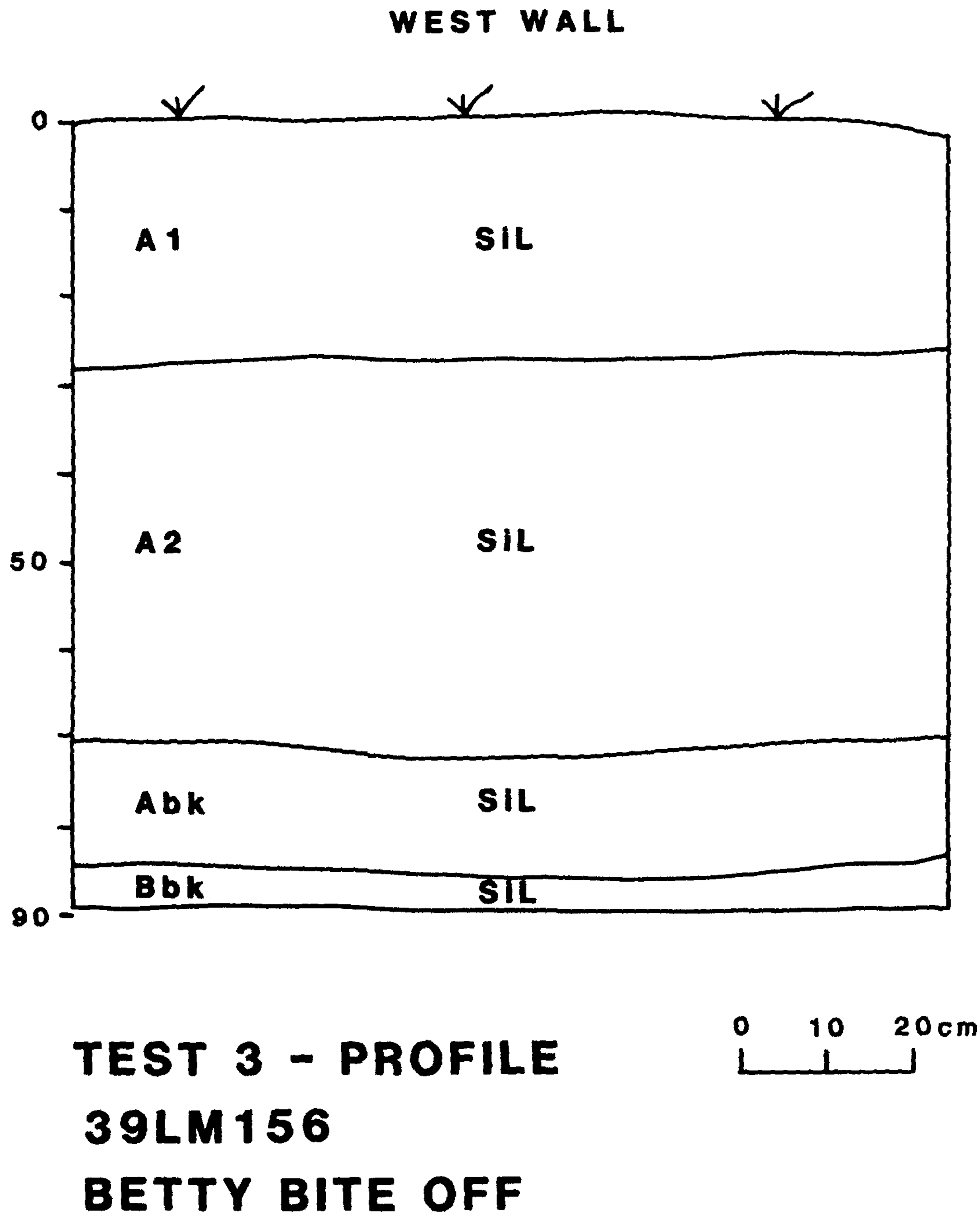


Figure 61. Profile Drawing of Test 3, Betty Bite Off Site (39LM156).

early ceramic component. It is associated with the upper part (surface or near-surface) of the Abk horizon in Tests 1-2 and Test 3. The second occupation, representing a late ceramic component, is correlated with the surface of the A2 horizon in Tests 1-2. The A2 horizon is present in Test 3, but no direct evidence of the late ceramic occupation was found in Test 3 itself. The late ceramic component appears to be rather ephemeral, however, and additional testing may reveal its presence at other locations in the upper part of the site. Two recent (historic) artifacts were found near the surface of the A1 horizon in Test 2.

Archeological Components, Radiocarbon Dates, and Analytic Units

The site is now known to contain three archeological components on the basis of this research and previous research conducted by UND. These are, in chronological order:

1. Recent, Historic (ca. late A.D. 1800s-present);

2. Late Ceramic; likely Plains Village, Extended Coalescent (ca. A.D. 1500-1675).

3. Early Ceramic; likely Plains Village, Initial Middle Missouri (ca. A.D. 1000-1300).

The recent component includes the log-filled depression as well as historic debris that is sparsely scattered about the site surface. It is of no archeological significance. The two ceramic components are potentially significant, but the test excavations yielded insufficient evidence to conclusively assign them to specific archeological taxa. They are therefore given the generic designation of Late and Early Ceramic components on the basis of their stratigraphic position and limited diagnostic artifactual content. Virtually all artifacts in the site collection relate to the Early Ceramic component. Very little was recovered from contexts assigned to the Late Ceramic component, which appears to represent a very ephemeral occupation episode.

Both ceramic components are clearly late prehistoric in age (ca. A.D. 1-1675), the time frame that is generally equatable with the manufacture of pottery by native peoples in the Lake Sharpe area. Thus, the late prehistoric period is also referred to as the ceramic period, although the ceramic period extends into protohistoric and historic times as well. The ceramics from the site are most similar to Plains Village pottery (ca. A.D. 1000-1675). The few sherds recovered from the Late Ceramic component most closely resemble Extended Coalescent pottery -- an Extended Coalescent variant affiliation is probable, but not confirmed. Likewise, the greater number of sherds from the Early Ceramic component are reminiscent of Initial Middle Missouri pottery -- an Initial Middle Missouri variant affiliation is likely, but it, too, remains unconfirmed.

No materials suitable for reliable radiocarbon dating were recovered from the site. Age estimates are based on temporal-cultural diagnostic artifacts. However, as the preceding discussion indicates, the diagnostic artifacts in the site sample are of limited interpretive value.

The description and analysis of the artifactual remains collected at the Betty Bite Off site proceeds according to the identified cultural components. Artifacts are assigned to these cultural-historic analytic units on the basis of cultural-stratigraphic associations in the test units.

Features

The only feature recorded at the site consists of Feature 1 (F1), the log-filled depression mapped by the UND survey crew (Figure 55). No features were encountered in the test excavations completed at the site. Nevertheless, the presence of hearths and other related features is suggested by the recovery of small quantities of fire-cracked rock, burned bone, burned earth, and charcoal from the Early Ceramic occupation zone. All of these materials are from Tests 1-2, with the exception of a few grams of burned bone from Test 3. The location of Tests 1-2 near the edge of the cutbank suggests that the portion of the site that once contained such features may have been destroyed by erosion. No features were observed eroding from the Lake Sharpe cutbank during these investigations or at the time of the UND survey work.

Native Ceramics

Ceramic remains in the site collection total 194 sherds, including 192 G2-3 body sherds and two G3 rim sherds. The pottery from the site is highly fragmented. No complete or even partially complete and reconstructable vessels are present in the assemblage. The sherds are probably from globular-shaped jars, but such an interpretation is open to question because of the small size of the pot sherds. Overall, the pottery from the site is relatively well made, consisting of a compact paste tempered with crushed granite (grit). Gray colors predominate, with some buff, brown, and grayish black sherds present in the sample.

Body Sherds

The body sherd sample from the site consists of 192 specimens, including 35 G2 sherds and 157 G3 sherds; no G1 sherds were recovered. The vast majority of the body sherds (184, 95.8%) are attributed to the Early Ceramic component. Only seven sherds (3.7%) are assigned to the Late Ceramic component, and one (0.5%) is from an ephemeral context located beneath the Early Ceramic occupation zone. Size grade data on the 191 body sherds assigned to either the Late or Early Ceramic components are presented according to test unit in Table 42. The single sherd from the ephemeral context is a G3 specimen. The majority of the sherds are small G3 specimens from the Early Ceramic occupation zone in Tests 1-2, especially Test 2 which was located nearest to the edge of the cutbank.

Surface treatment data were recorded for all G2 body sherds in the site sample (Table 43). The single G2 specimen assigned to the Late Ceramic component is plain/smoothed. Surface treatment data were also recorded for the six remaining G3 specimens from the Late Ceramic component in order to

Table 42. Native Ceramic Body Sherd Size Grade Data by Test Unit and Component, Betty Bite Off Site (39LM156).

Component/ Test Unit		Size Grade			
		Grade 1	Grade 2	Grade 3	Total
<u>Late</u> <u>Ceramic</u>					
1	n	-	1	5	6
	%	-	16.7	83.3	100.0
2	n	-	-	1	1
	%	-	-	100.0	100.0
3	n	-	-	-	-
	%	-	-	-	-
Subtotal	n	-	1	6	7
	%	-	14.3	85.7	100.0
<u>Early</u> <u>Ceramic</u>					
1	n	-	6	19	25
	%	-	24.0	76.0	100.0
2	n	-	27	128	155
	%	-	17.4	82.6	100.0
3	n	-	1	3	4
	%	-	25.0	75.0	100.0
Subtotal	n	-	34	150	184
	%	-	18.5	81.5	100.0
Total	n	-	35	156	191
	%	-	18.3	81.7	100.0

Table 43. Native Ceramic Body Sherd Surface Treatment Data by Test Unit and Component, Size Grade 2 Only, Betty Bite Off Site (39LM156).

Component/ Test Unit		Plain/ Smoothed	Simple Stamped	Cord Roughened	Total Class.	Indet.	Total
Late Ceramic							
1	n	1	-	-	1	-	1
	%*	100.0	-	-	100.0	-	-
2	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
3	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
Subtotal	n	1	-	-	1	-	1
	%	100.0	-	-	100.0	-	-
Early Ceramic							
1	n	2	-	-	2	4	6
	%	100.0	-	-	100.0	-	-
2	n	8	-	11	19	8	27
	%	42.1	-	57.9	100.0		
3	n	1	-	-	1	-	1
	%	100.0	-	-	100.0	-	-
Subtotal	n	11	-	11	22	12	34
	%	50.0	-	50.0	100.0	-	-
Total	n	12	-	11	23	12	35
	%	52.2	-	47.8	100.0	-	-

*Percentages are calculated based on the total number of classifiable sherds; indeterminate body sherds are excluded from percentage calculations.

increase the sample size. Five of these specimens are also plain/smoothed and one is indeterminate. The G2 body sherd from the Late Ceramic component has a maximum thickness value of 3.3 mm. The six G3 sherds from this component are also relatively thin.

The classifiable G2 body sherds from the Early Ceramic component are equally split between plain/smoothed (n=11) and cord roughened (n=11) surface treatments (Table 43). Surface treatment for an additional 12 G2 sherds assigned to the Early Ceramic component is indeterminate. A mean maximum thickness value of 5.5±1.2 mm was calculated for the G2 specimens from the Early Ceramic component.

Rim Sherds and Vessels

Only two small G3 rim sherds were recovered from the site, one from Test 2 and one from Test 3. Both specimens are assigned to the Early Ceramic component, and both are unclassifiable lip fragments. They are possibly from Anderson Plain vessels (cf. Caldwell and Jensen 1969:42), an Initial Middle Missouri ceramic type, but such an interpretation is largely speculative. The rim sherds are too small for effective illustration. The reader is referred to the Antelope Dreamer site report (Section VI) for additional information on Anderson Plain rims.

Stone Tools

Twenty chipped stone tools were recovered from the test excavations at Betty Bite Off. No pecked/ground stone tools are present in the sample. Descriptive categories represented in the assemblage include patterned biface fragments (n=4), end scrapers (n=1), other retouched and modified flakes (n=7), and bipolar cores/tools (n=8). Eighteen tools are single function implements, and two are double function, yielding a total of 22 functional tool occurrences. Only one stone tool is assigned to the Late Ceramic component. The 21 other functional occurrences are attributed to the Early Ceramic component. Most of the specimens are small tool fragments that are not amenable to effective illustration. The reader is referred to the Antelope Dreamer site report (Section VI) where examples of similar stone tools are illustrated according to functional class.

Tool Technology

The single stone tool from the Late Ceramic component is a technological class 5 specimen, an unpatterned flake tool. Technological classification of the Early Ceramic component stone tools is summarized according to test unit in Table 44. Although the sample is small, an emphasis on unpatterned tool forms is apparent, including seven unpatterned flake tools (33.3%) and nine bipolar cores-tools (42.9%). Patterned tool forms consist of four large thin bifaces (19.0%) and one patterned flake tool (4.8%). In contrast to most other artifact classes, the majority of the stone tools were recovered from Test 3. This observation is somewhat misleading, however, because the four class 2 specimens from Test 3 are plate chalcedony fragments that likely derive from the same tool.

Table 44. Stone Tool Technological Class Data by Test Unit, Early Ceramic Component, Betty Bite Off Site (39LM156).

Technological Class		Test 1	Test 2	Test 3	Total
1 Small Thin Patterned Bifaces	n	-	-	-	-
	%	-	-	-	-
2 Large Thin Patterned Bifaces	n	-	-	4	4
	%	-	-	44.4	19.0
3 Irregular Unpatterned Bifaces	n	-	-	-	-
	%	-	-	-	-
4 Patterned Flake Tools	n	1	-	-	1
	%	20.0	-	-	4.8
5 Unpatterned Flake Tools	n	1	1	5	7
	%	20.0	14.3	55.6	33.3
6 Thick Bifacial Core-Tools	n	-	-	-	-
	%	-	-	-	-
7 Nonbipolar Cores-Tools	n	-	-	-	-
	%	-	-	-	-
8 Bipolar Core-Tools	n	3	6	-	9
	%	60.0	85.7	-	42.9
9 Unpatterned Pecked/Ground Stone Tools	n	-	-	-	-
	%	-	-	-	-
10 Patterned Pecked/Ground Stone Tools	n	-	-	-	-
	%	-	-	-	-
Total	n	5	7	9	21
	%	100.0	100.0	100.0	100.0

Technology and Lithic
Raw Materials

Lithic raw material type frequency data for those technological classes represented in the Early Ceramic component assemblage from Betty Bite Off are presented in Table 45. Ten different raw material types were identified. The sample is too small to establish a reliable pattern of lithic resource utilization for the component. The assemblage is about equally divided between various local (52.4%) and nonlocal (47.6%) materials. Nonlocal materials from the northern and western resource groups are represented in equal proportions. The single unpatterned flake tool from the Late Ceramic component is made of solid quartzite.

Function and Use-Phase

The single stone tool from the Late Ceramic component is a utilized flake used to saw or slice hard material such as wood or bone (class 22). It is complete and fully functional (use-phase 3).

Data on the functional classification of the Early Ceramic component stone tool sample according to use-phase class are contained in Table 46. The tool sample from the component exhibits a limited range of functions. The majority of the tools are finished specimens that were broken or exhausted during use (use-phase 4). A brief discussion on the general functional groups and specific functional classes represented in the assemblage follows. The Antelope Dreamer site report contains more complete information on stone tool functional groups and classes.

Patterned tool forms in the Early Ceramic sample include 4 bifacial cutting tools and 1 scraping tool. The bifacial cutting tools are assigned to the generalized patterned bifacial cutting tool class (class 15) because two were broken during manufacture (use-phase 2) and the two that were broken during use (use-phase 4) are too small for a more specific functional assessment. The scraping tool is a transverse scraper used on hard materials such as bone or wood (class 17). It is a broken or exhausted implement (use-phase 4) that was recycled into a bipolar punch/wedge/chisel (class 26).

Unpatterned bipolar tools or potential tools are the most common implements in the Early Ceramic stone tool assemblage, consisting of eight core/punch/wedge/chisels (class 25) and one punch/wedge/chisel (class 26). Class 25 specimens are "either exhausted bipolar core nuclei or intermediary tools used as punches, wedges, or chisels in wood or bone working endeavors; wear and morphology characteristics are sufficiently indistinct to preclude more specific functional classification" (Ahler and Swenson 1985:334). As was just discussed, the class 26 specimen was made from a recycled end scraper. Class 26 tools are typically recycled nonbipolar implements that have been altered or remanufactured by bipolar percussion techniques. They are interpreted as noncore tools that were used as punches, wedges, or chisels in bone or woodworking tasks (Ahler and Swenson 1985:334).

Unpatterned flake tools are the second most numerous kind of implement in the Early Ceramic sample. The six prepared or regularly modified unpatterned flake tools are classified as retouched or utilized flakes used on variable material (class 23). Class 23 flake tools are thought to have been used for a

Table 45. Stone Tool Raw Material Type Data by Technological Class, Early Ceramic Component, Betty Bite Off Site (39LM156).

Resource Group and Raw Material Type		Technological Class 2	4	5	8	Total n	%
Local Resource Group							
04 Solid Quartzite		-	-	2	-	2	9.5
05 Porous Quartzite		-	-	1	1	2	9.5
06 Jasper/Chert		-	-	2	2	4	19.0
08 Clear/Gray Chalcedony		-	-	-	1	1	4.8
09 Yellow or Light Brown Chalcedony		-	-	-	1	1	4.8
10 Dark Brown Chalcedony		-	-	1	-	1	4.8
Subtotal		-	-	6	5	11	52.4
Northern Resource Group							
01 Smooth Gray TRSS		-	-	-	1	1	4.8
28 Knife River Flint		-	1	1	2	4	19.0
Western Resource Group							
07 Flattop Chalcedony		-	-	-	1	1	4.8
11 Plate Chalcedony		4	-	-	-	4	19.0
Subtotal		4	1	1	4	10	47.6
Total	n	4	1	7	9	21	100.0
	%	19.0	4.8	33.3	42.9	100.0	

Table 46. Stone Tool Functional Class Data by Use-Phase Class, Early Ceramic Component, Betty Bite Off Site (39LM156).

General Functional Group/ Specific Functional Class		Use-Phase Class 1	2	3	4	Total
2. Patterned Bifacial Cutting Tools						
15 Generalized patterned bifacial cutting tool		-	2	-	2	4
3. Patterned or Heavy Duty Scraping Tools						
17 Transverse scraper used on hard material		-	-	-	1	1
5. Prepared or Regularly Modified Unpatterned Flake Tools						
23 Retouched or utilized flake used on variable material		-	-	3	3	6
6. Unprepared or Irregularly Modified Unpatterned Flake Tools						
22 Utilized flake used to saw or slice hard material		-	-	-	1	1
12. Bipolar Tools or Potential Tools						
25 Core/punch/wedge/chisel		-	-	-	8	8
26 Punch/wedge/chisel		-	-	1	-	1
Subtotal		-	-	(1)	(8)	(9)
Total	n	-	2	4	15	21
	%	-	9.5	19.1	71.4	100.0

variety of cutting, slicing, sawing, and scraping tasks on a number of different kinds of worked materials (Ahler and Swenson 1985:334). The one unprepared or irregularly modified unpatterned flake tool is classified as a utilized flake used to saw or slice hard material (class 22). Class 22 flake tools allow a more specific functional interpretation. These implements "were used to saw or cut relatively hard materials such as wood or bone . . . for relatively short periods of time" (Ahler and Swenson 1985:333).

Chipped Stone Flaking Debris

A total of 129 G2-3 pieces of chipped stone flaking debris was recovered from the test excavations at Betty Bite Off. Nine flakes comprising 7.0% of the sample are G2 specimens; the remaining 120 flakes comprising 93.0% of the sample are G3 specimens (Table 47). No G1 flakes were present in the assemblage and no water screen samples were taken at the site which would have yielded G4 flakes. All of the flaking debris is from the Early Ceramic component; none is assigned to the Late Ceramic component. Most specimens are from the Early Ceramic occupation zone in Tests 1-2.

It is difficult to precisely interpret the flaking debris size grade data in terms of the chipped stone tool technological operations performed at the site because appropriate samples of G4 flaking debris are lacking. Nevertheless, the high percentage of G3 flakes in the sample suggests that tool manufacture and maintenance operations were commonly performed during the Early Ceramic occupation (Table 47). The low percentage of G2 flakes and the complete absence of G1 flaking debris would seem to indicate that core reduction was not a major activity. Such an interpretation is somewhat at odds with the relatively large number of potential bipolar cores in the Early Ceramic stone tool assemblage. One could speculate that the bipolar core-tools were actually used as punch/wedge/chisel implements rather than as cores for flake blank production.

Flaking debris raw material type data by size grade are presented in Table 48. The range of materials used in the manufacture of stone tools at the site is similar to that identified in the stone tool analysis, except for the addition of a few more local lithic types and the absence of Flattop chalcedony in the flaking debris sample. However, the percentages of local and nonlocal lithic types in the flaking debris sample indicate a different trend in resource utilization than did the stone tool data. The flaking debris sample is heavily dominated by various local raw material types (93.0%), particularly porous quartzite (57.4%). Therefore, locally available materials were used much more often than nonlocal materials in the manufacture of chipped stone tools at the site during the Early Ceramic occupation. This is as expected considering that the majority of the tool sample consists of unpatterned tool forms, and the recognized tendency of Middle Missouri Villagers to manufacture these implements from locally available materials (cf. Ahler 1977a; Johnson 1984a).

Table 47. Chipped Stone Flaking Debris Size Grade Data by Test Unit and Component, Betty Bite Off Site (39LM156).

Component/ Test Unit		Size Grade			
		Grade 1	Grade 2	Grade 3	Total
Late Ceramic					
1	n	-	-	-	-
	%	-	-	-	-
2	n	-	-	-	-
	%	-	-	-	-
3	n	-	-	-	-
	%	-	-	-	-
Subtotal	n	-	-	-	-
	%	-	-	-	-
Early Ceramic					
1	n	-	-	43	43
	%	-	-	100.0	100.0
2	n	-	7	65	72
	%	-	9.7	90.3	100.0
3	n	-	2	12	14
	%	-	14.3	85.7	100.0
Subtotal	n	-	9	120	129
	%	-	7.0	93.0	100.0
Total	n	-	9	120	129
	%	-	7.0	93.0	100.0

Table 48. Chipped Stone Flaking Debris Raw Material Type Data by Size Grade, Early Ceramic Component, Betty Bite Off Site (39LM156).

Resource Group and Raw Material Type		Size Grade			Total	
		Grade 1	Grade 2	Grade 3	n	%
Local Resource Group						
02 Coarse Yellow TRSS		-	1	2	3	2.3
04 Solid Quartzite		-	-	1	1	0.8
05 Porous Quartzite		-	4	70	74	57.4
06 Jasper/Chert		-	2	19	21	16.3
08/09/10 Various Chalcedonies		-	-	19	19	14.7
16 Quartz		-	-	1	1	0.8
35 Other Quartzite		-	1	-	1	0.8
Subtotal, Local Resources		-	8	112	120	93.0
Northern Resource Group						
01 Smooth Gray TRSS		-	-	1	1	0.8
28 Knife River Flint		-	1	4	5	3.9
Western Resource Group						
11 Plate Chalcedony		-	-	3	3	2.3
Subtotal, Nonlocal Resources		-	1	8	9	7.0
Total	n	-	9	120	129	100.0
	%	-	7.0	93.0	100.0	

Fire-Cracked Rock

A relatively small quantity of fire-cracked rock (FCR) totaling 366 g was obtained from the test excavations at the site. All of the FCR is associated with the Early Ceramic component; none was collected from Late Ceramic component contexts. The majority of the sample comes from Test 1 (Table 49). This amount seems low for an early ceramic period occupation because FCR, most of which consists of debris from heated stone used for cooking (stone boiling or roasting) and other purposes, is usually a very numerous artifact class. However, large quantities of FCR are most often found associated with hearths and large pits. The fact that features such as these were not encountered in any of the test units likely accounts for the small quantity of FCR in the Early Ceramic assemblage. Raw material types were not recorded for FCR. Virtually all of this artifact class consists of granites, basalts, and quartzites that are found in abundance in local glacial-fluvial gravels. Granite is usually the most common lithic type in FCR samples from the Middle Missouri subarea.

Other Artifacts

Other artifacts recovered from the test excavations at Betty Bite Off are listed by test unit and component in Table 50. Included here are small amounts of recent (historic) metal, unmodified natural clinker, unmodified and unidentifiable shell, burned earth, and charcoal or burned wood. All of this material derives from Early Ceramic component contexts in Tests 1-2, with the exception of two pieces of recent metal found in the upper levels of Test 2. The recent metal consists of a bottle cap and a can pull tab, both of which are from beverage containers. The few small (G2-3) pieces of clinker are probably debris from the manufacture of clinker abrading tools. The shell consists of small G3 fragments from freshwater mussels of an unknown species. One piece of shell (a hinge fragment) was listed as potentially identifiable in the site artifact inventory, but the specimen proved to be too small for a positive species identification (T. L. Steinacher, personal communication 1988). The shell was probably collected locally, and it represents either subsistence refuse and/or debris from the manufacture of shell artifacts.

Vertebrate Fauna

Vertebrate fauna remains recovered from test excavations at the Betty Bite Off site total a mere 72 g of G2-G3 unmodified bone debris. Of this amount, 18 g of bone shows evidence of burning. Only a few specimens are potentially identifiable; two exhibit evidence of modification and use (bone tools). The majority of the bone (64 g) is assigned to the Early Ceramic component. Only 4 g of bone debris is attributed to the Late Ceramic component, none of which is burned (Table 51). The remaining 4 g of bone in the site sample is from ephemeral contexts located beneath the Early Ceramic occupation zone in Tests 1-2. The potentially identifiable specimens were all recovered from the Early Ceramic occupation zone, with the exception of two specimens from an ephemeral context just beneath this zone. The two modified bone specimens are from the Early Ceramic zone in Test 1.

Table 49. Fire-Cracked Rock Size Grade Data by Test Unit and Component, Betty Bite Off Site (39LM156).

Component/ Test Unit		Size Grade (grams) Grade 1	Grade 2	Grade 3	Total
Late Ceramic					
1	wt	-	-	-	-
	%	-	-	-	-
2	wt	-	-	-	-
	%	-	-	-	-
3	wt	-	-	-	-
	%	-	-	-	-
Subtotal	wt	-	-	-	-
	%	-	-	-	-
Early Ceramic					
1	wt	238	40	13	291
	%	81.8	13.7	4.5	100.0
2	wt	-	16	19	35
	%	-	45.7	54.3	100.0
3	wt	-	16	24	40
	%	-	40.0	60.0	100.0
Subtotal	wt	238	72	56	366
	%	65.0	19.7	15.3	100.0
Total	wt	238	72	56	366
	%	65.0	19.7	15.3	100.0

Table 50. Data on Other Artifacts by Test Unit and Component, Betty Bite Off Site (39LM156).

Component/ Test Unit		Recent Metal	Clinker	Shell		Burned Earth (g)	Charcoal/ Wood (g)
<u>Recent</u>							
1	n	-	-	-	wt	-	-
2	n	2	-	-	wt	-	-
3	n	-	-	-	wt	-	-
Subtotal	n	2	-	-	wt	-	-
<u>Late Ceramic</u>							
1	n	-	-	-	wt	-	-
2	n	-	-	-	wt	-	-
3	n	-	-	-	wt	-	-
Subtotal	n	-	-	-	wt	-	-
<u>Early Ceramic</u>							
1	n	-	3	1	wt	10	-
2	n	-	4	5	wt	7	2
3	n	-	-	-	wt	-	-
Subtotal	n	-	7	6	wt	17	2
Total	n	2	7	6	wt	17	2

Table 51. Unmodified Bone Size Grade Data by Test Unit and Component, Betty Bite Off Site (39LM156).

Component/ Test Unit		All Bone (grams)				Burned Bone (grams)			
		G1	G2	G3	Total	G1	G2	G3	Total
Late Ceramic									
1	wt	-	2	2	4	-	-	-	-
	*%	-	50.0	50.0	100.0	-	-	-	-
2	wt	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-
3	wt	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-
Subtotal	wt	-	2	2	4	-	-	-	-
	%	-	50.0	50.0	100.0	-	-	-	-
Early Ceramic									
1	wt	-	9	14	23	-	4	6	10
	*%	-	39.1	60.9	100.0	-	44.4	42.9	43.5
2	wt	-	6	11	17	-	-	2	2
	%	-	35.3	64.7	100.0	-	-	18.2	11.8
3	wt	-	9	15	24	-	3	3	6
	%	-	37.5	62.5	100.0	-	33.3	20.0	25.0
Subtotal	wt	-	24	40	64	-	7	11	18
	%	-	37.5	62.5	100.0	-	29.2	27.5	28.1
Total	wt	-	26	42	68	-	7	11	18
	%	-	38.2	61.8	100.0	-	26.9	26.2	26.5

*Burned bone percentages are stated as a product of the quantities of "all bone."

The identifiable and modified bone from the site is considered in detail in Appendix B (Wheeler, this report). Only the general characteristics of these materials are considered here. Specifically identifiable specimens in the collection consist entirely of cranial elements of prairie dog and rabbit recovered from Tests 1-2. These remains probably relate to the Early Ceramic component, but they could also be natural occurrences unrelated to the occupation of the site by humans. The remaining unidentifiable bone debris in the sample appears to be principally from large mammals (e.g., bison).

Artifact Distributions and Densities

Distribution and density data on the major classes of prehistoric artifacts from the Betty Bite Off site are presented in Table 52. The data are presented according to test unit and component. Because each test unit is a 1 X 1 m square, the data provided for each test represents quantities per square meter. Totals for each component and for the site as a whole are stated as numbers or weights of artifacts per square meter ($n/wt/m^2$).

A perusal of the data in Table 52 clearly indicates that the Late Ceramic occupation of the site was very ephemeral. Only small quantities of body sherds, stone tools, and unmodified bone are represented in the Late Ceramic sample. The Early Ceramic component exhibits a more intensive level of site utilization based on the limited testing reported here. Artifact densities for the Early Ceramic component are generally the highest in Tests 1-2. However, Test 3 also yielded a wide range of artifactual remains, as well as producing slightly higher numbers of stone tools and unmodified bone than did Tests 1 and 2 individually. Overall, the distribution and density data indicate that the lower portion of the site contains the most artifacts, particularly the lower cutbank area.

Discussion and Conclusions

The Betty Bite Off site appears to have functioned as a field camp or location for Plains Village task groups. If the Early and Late Ceramic components identified at the site are in fact affiliated with the Initial Middle Missouri and Extended Coalescent variants, it is likely that the site functioned as a location or special-purpose activity area for small Plains Village task groups operating in the immediate vicinity. Initial Middle Missouri peoples from the Gilman village site (39LM226), located directly across the small bay from Betty Bite Off, could have easily used the site for resource extraction tasks and other purposes without the need to set up a temporary residential base. This statement is also applicable to the presumed Extended Coalescent component because Extended Coalescent village sites (e.g., Stricker, 39LM1 [Smith 1975]) are located a short distance downstream on both sides of Medicine Creek in the Iron Nation Recreation Area (Steinacher 1981; Steinacher and Toom 1985). The data from the site are insufficient to determine the specific tasks that were carried out at this location, but one can speculate that they were related to the exploitation of bottomland resources.

Table 52. Major Prehistoric Artifact Class Distribution and Density Data by Test Unit and Component, Betty Bite Off Site (39LM156).

Component/ Test Unit	Rim Sherds	Body Sherds	Stone Tools	Flaking Debris	FCR (g)	Unmodified Bone (g)
<u>Late Ceramic</u>						
1	-	6	1	-	-	4
2	-	1	-	-	-	-
3	-	-	-	-	-	-
Subtotal	-	7	1	-	-	4
n/wt/m^2	-	2.33	0.3	-	-	1.3
<u>Early Ceramic</u>						
1	-	25	5	43	291	23
2	1	155	7	72	35	17
3	1	4	9	14	40	24
Subtotal	2	184	21	129	366	64
n/wt/m^2	0.7	61.3	7.0	43.0	122.0	21.3
Total	2	191	22	129	366	68
n/wt/m^2	0.7	63.7	7.3	43.0	122.0	22.7

Available evidence indicates that much of the site has been destroyed by erosion, particularly those areas that once exhibited the highest diversity and density of artifactual materials. The remaining portion of the Late Ceramic component seems to be extremely ephemeral. While the remainder of the Early Ceramic component did yield more diverse and numerous artifacts, it, too, does not appear to represent a significant archeological deposit. The inability of these investigations to link the late prehistoric components at the site to defined archeological taxa further depreciates their research potential.

IX. BUZZING YUCCA SITE (39LM166)

Site Description and Background

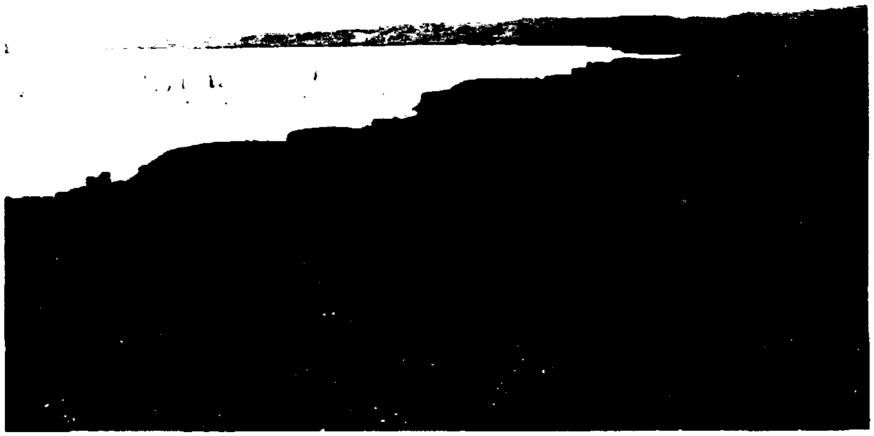
The Buzzing Yucca site is a small, dispersed, unfortified earthlodge village and associated debris scatter located on the margins of the Missouri Breaks zone adjacent to Lake Sharpe immediately to the southeast of Cedar Creek Bay (Figure 1). The village proper consists of at least two and probably as many as three earthlodge depressions found near the shoreline. The village debris scatter covers a considerable area beyond the earthlodge locations. The site also contains the remains of a historic homestead or farmyard (Toom and Picha 1984). Buzzing Yucca is very long and narrow, measuring about 850 m northwest-southeast by 200 m northeast-southwest, covering a total area of approximately 17.0 ha (42.0 acres). It is situated at an elevation of about 1430-1500 ft amsl between the lake shoreline and higher Missouri Breaks terrain to the southwest (Figures 62 and 63).

Three circular depressions (Features 5-7) marking the remains of late prehistoric earthlodges are present on the flatter, low-lying ground near the lakeshore (Figures 63 and 64). There are also four smaller depressions located on the higher ground in the northwestern and southwestern site areas that might represent natural features, cache pits, and/or human burials (Features 1-4). Two depressions identified as historic structural remains are also present at the site. The historic depressions (Features 8 and 9) are located on a small, flattopped knoll adjacent to the Lake Sharpe shoreline (Figure 63). The historic component is principally located in this part of the site. Two of the circular earthlodge depressions (Features 6 and 7) are also situated on this knoll. The larger of the two historic depressions (Feature 8) is roughly rectangular and is probably the remains of a dugout structure or house. The smaller depression (Feature 9) is dug into a slope and may have been a small root cellar.

The site is presently in stable condition. The Lake Sharpe cutbank forming the northeastern margin of the site does not appear to be undergoing rapid erosion due to the resistance of exposed Pierre Shale bedrock. An examination of 1938-1939 aerial photo coverage indicates that little of the site area was inundated or has been eroded away by Lake Sharpe.

Previous Archeological Research

The Buzzing Yucca site was first discovered and recorded in 1983 by an archeological survey crew from the University of North Dakota (UND) under the supervision of T. L. Steinacher (Toom and Picha 1984). This work was performed by UND as part of a contractual agreement with the U.S. Army Corps of Engineers (USACE), Omaha District, to conduct an archeological survey of specified federal lands on the west bank of the Lake Sharpe project area (D. L. Toom, principal investigator; S. A. Ahler, co-principal investigator). The UND investigations at the site focused on site documentation, particularly mapping and the collection of selected surface artifacts (primarily ceramics).



A

B

Figure 62. General Photos of the Buzzing Yucca Site (39LM166). A: Overview of site area from the vicinity of PD1 (see Figure 63), southeast view (photo no. 3061, WCRM 1987). B: Overview of the site area, northwest view (photo no. 2534, UND 1983).

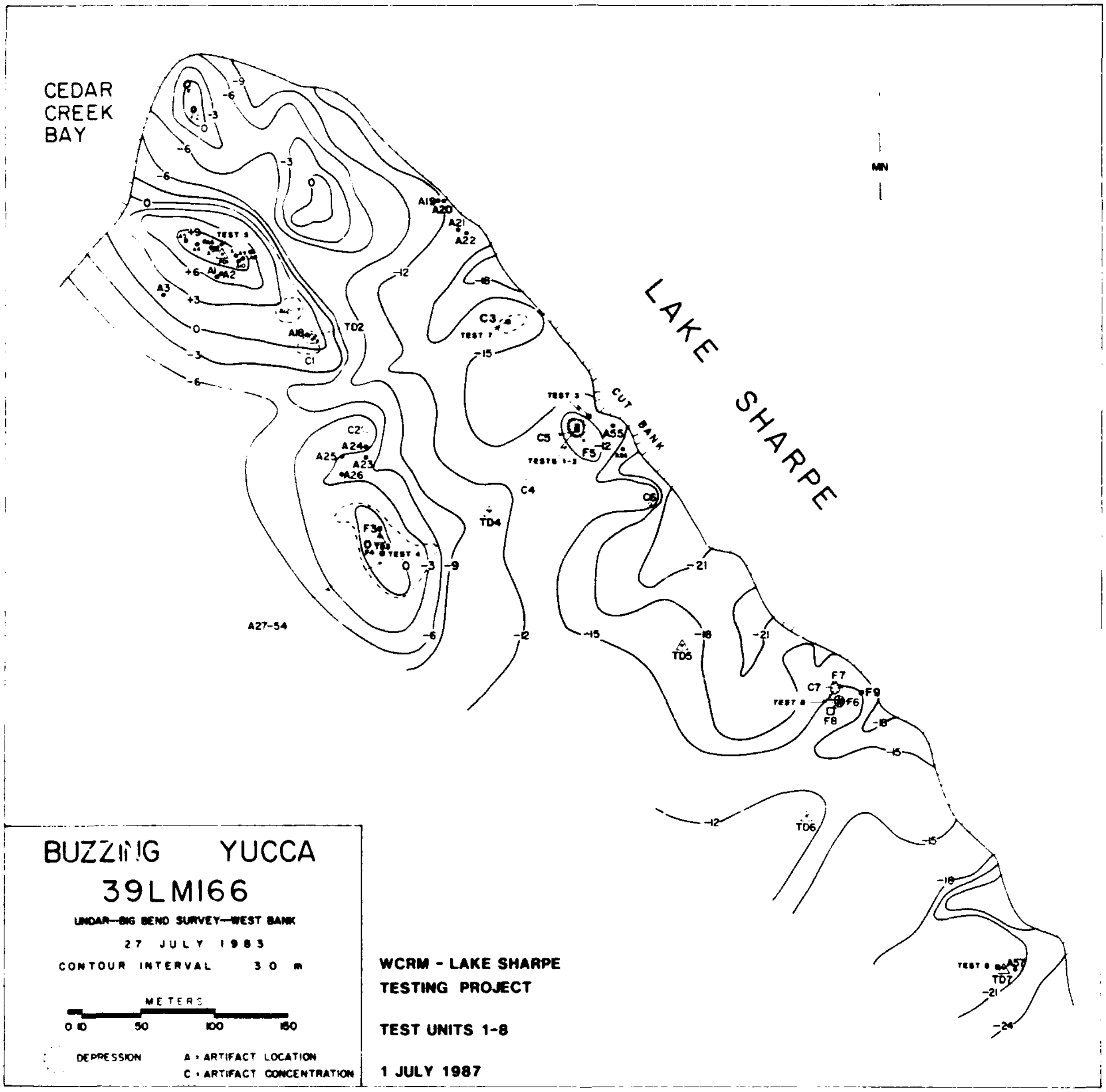
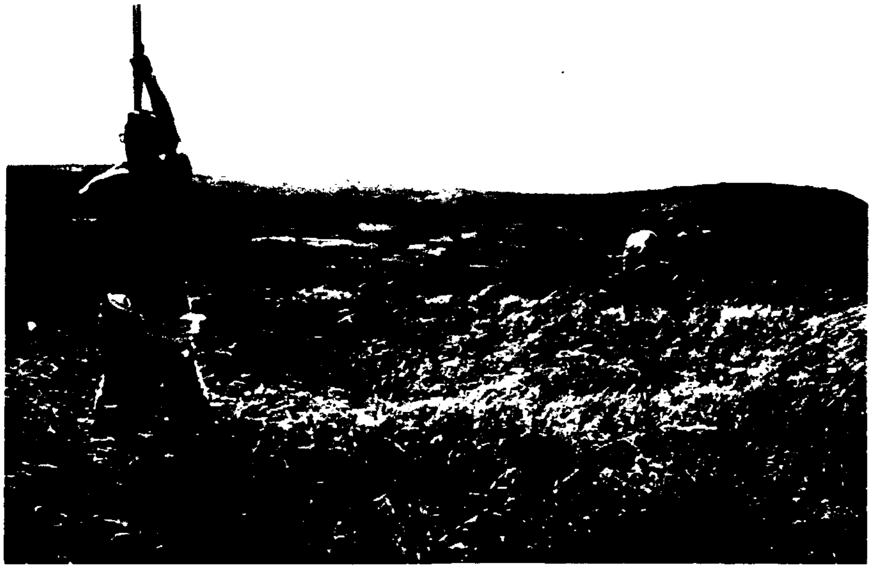


Figure 63. Contour Map of the Buzzing Yucca Site (39LM166).



A

B

Figure 64. Photos of Feature 5 (House 5), Buzzing Yucca Site (39LM166). A: Crew mapping the Feature 5 depression, northwest view (photo no. 2530, UND 1983). B: Crew person standing in the Feature 5 depression, southeast view (photo no. 2531, UND 1983).

The UND crew recorded a sparse scattering of late prehistoric Plains Village artifactual remains over much of the site surface, including some artifact concentrations, particularly on the higher, less vegetated ground to the east of Feature 5. Materials identified at the site consist of light to moderate densities of pottery, chipped stone tools and flaking debris, ground stone tools, faunal remains, and fire-cracked rock. Ceramics collected and observed at the site, while not particularly numerous, were used to assign the Plains Village component to the Extended Coalescent variant. Hand coring of the presumed earthlodge depressions revealed that one (Feature 5) did indeed represent the remains of an Extended Coalescent house. Hand coring of the other two depressions (Features 6 and 7) was inconclusive.

A records search conducted at the Lyman County Courthouse, Kennebec, South Dakota, failed to disclose any recorded deed transactions pertaining to the historic component at Buzzing Yucca. These have either been lost or were overlooked by UND investigators. An examination of 1894 Missouri River Commission Maps (sheet 39) revealed a road on the now inundated floodplain leading to two unidentified structures at this location. A house, a corral, and what appear to be four other smaller buildings are visible on a 1938 USDA aerial photo. On the basis of this information, UND researchers estimated that the historic component at 39LM166 was occupied from at least 1894-1938 (Toom and Picha 1984). USACE War Department Maps published in 1947 show no structures at this location so it is safe to assume the occupation was terminated and the structures were dismantled and removed from the site before this date.

The Extended Coalescent village component was recommended for testing and evaluation as a potential National Register property. Additional documentary research and evaluation was also recommended for the historic component.

Present Investigations

The present investigations at Buzzing Yucca are primarily concerned with the testing and evaluation of the Extended Coalescent village component in order to nominate it to the National Register of Historic Places. The goals of this research include the generation of sufficient information to confirm its cultural affiliation, vertical and horizontal boundaries, and to assess its artifactual content for both intramural (within-house) and extramural (outside-house) contexts. No attempt was made to directly address the additional research requirements of the historic component which is of questionable archeological significance.

Fieldwork

Eight 1 X 1 m test units were excavated at the site, as specified in the USACE Scope of Work (Appendix O). Test unit specifications are summarized in Table 53. The test units were excavated to varying depths into and through the Extended Coalescent occupation zone. A total of about 2.75 m^3 of controlled excavation was completed at the site (Table 53). No attempt was made to surface collect temporal-cultural diagnostic artifacts in view of the thorough surface collection made by the UND survey team.

Table 53. Test Unit Specifications and Combined Units, Buzzing Yucca Site (39LM166).

Test Unit	Context	Combined Units and Aggregate Size	Excavated Depth*	Excavated Volume*
3	Extramural	None - 1 X 1 m	30 cm	0.3 m^3
4	Extramural	None - 1 X 1 m	40 cm	0.4 m^3
5	Extramural	None - 1 X 1 m	20 cm	0.2 m^3
7	Extramural	None - 1 X 1 m	30 cm	0.3 m^3
8	Extramural	None - 1 X 1 m	30 cm	0.3 m^3
Subtotal, Extramural Tests				1.5 m^3
1	House 5	Tests 1&2 - 1 X 2 m	45 cm	0.45 m^3
2	House 5	Tests 1&2 - 1 X 2 m	45 cm	0.45 m^3
Subtotal, House 5 Tests				0.9 m^3
6	House 6	None - 1 X 1 m	35 cm	0.35 m^3
Total				2.75 m^3

*Does not include subfloor features in houses (i.e., F100 in House 5 and F101 in House 6).

Tests 1 and 2 were combined to form a 1 X 2 m excavation into Feature 5, herein designated House 5 (Figure 63). Tests 1-2 were placed over the center of the house depression where hand coring indicated the central hearth was located. No other test units at the site were combined into larger excavations. Test 6 was placed near the center of Feature 6 (House 6) where hand coring also indicated a hearth was present. The hearths in these two earthlodges were specifically targeted for excavation because of their potential to yield significant quantities and types of artifacts and ecofacts. Hand coring of Feature 7 (House 7) was once again inconclusive, primarily because of extremely hard soil conditions. It was decided that Feature 7 would not be tested in view of the results of the hand coring and the need to spread the remaining test units over a sizable site area. The remaining five test units were distributed about the site area in order to provide some data on the artifactual content and stratigraphy of extramural contexts at the

site. Test 3 was placed just beyond the depression of House 5 to examine an extramural context near a confirmed house. The other four extramural tests were placed well away from house areas (Figure 63). The smaller features (F1-4) were not tested so as to avoid disturbance to possible human burials.

All test units were excavated according to 10 cm arbitrary levels for the most part. Terminal levels into houses and feature levels were adjusted to fit the contours of the house floors and the portions of hearth features uncovered in the intramural tests. The sediment matrix from all extramural excavation units and most all intramural excavation units was dry screened over one-quarter inch mesh hardware cloth screens. Systematic water screen samples were not collected from the intramural test unit levels at Buzzing Yucca as they were at Antelope Dreamer. The logistical exigencies of archeological work at Buzzing Yucca demanded a more conservative approach to water screen sampling. The site is extremely isolated and can be reached easily only by boat. The transportation of all personnel and materials to and from the site by boat placed severe limitations on the number of water screen samples that could be collected and removed off-site to a processing facility. In view of this, water screen samples representing one-ninth fractions (33.3 X 33.3 cm) were taken only from selected excavation units in House 5 (Tests 1 and 2). These include two water screen samples from the rooffall/floor level of the house and one from the fill of the central hearth (Feature 100). Similar water screen samples were also to have been taken from House 6 (Test 6). However, due to an oversight on the part of the excavators of Test 6, these samples were not collected; all soil matrix from Test 6 was one-quarter inch dry screened.

Geomorphic Context and Stratigraphy

The low-lying portion of the Buzzing Yucca site, that adjacent to Lake Sharpe, appears to occupy a narrow bench (strath or rock-cut terrace) cut into the Pierre Shale bedrock. The bench ranges in elevation from about 1430-1460 ft amsl and is graded to the approximate level of the MT-2 terrace, which is present on the east side of Lake Sharpe opposite the site (cf. Coogan 1980). The MT-2 is a depositional (cut-and-fill) terrace (Coogan 1987:54). The relationship between the bench and the MT-2 is unknown. Since its formation, the bench has been extensively dissected and eroded by local drainageways and sheet runoff originating in the higher Breaks terrain to the southwest of the site. The higher elevation portions of the site consist of eroded Pierre Shale hills or ridges that rise to an elevation of about 1480-1500 ft amsl in the western part of the site. These low hills constitute the outer fringe of the Missouri Breaks zone proper, which flanks the bench along its west side.

Profile Descriptions, Sediments, and Soils

The surface of the site consists of shallow to moderately deep clayey soils formed in Pierre Shale residuum. Exposed areas of Pierre Shale bedrock are intermingled with the soils, principally in the steeper and more eroded parts of the landscape. The shallow soils are referred to Sansarc clays; the moderately deep soils are called Opal clays (Schumacher 1987). The Sansarc clays are located mainly in the northwestern part of the site, while the Opal clays are found on low knolls along the Lake Sharpe shoreline in the extreme

southeastern part of the site. Small, thin areas of loess (silt loam) occasionally cover the low-lying clayey soils where depressions or other large features serve as loess traps.

The construction and subsequent collapse of earthlodges at as many as three locations at the site has interrupted the natural soil sequence. The excavation of shallow house pits has removed the natural surface horizons, and the collapse of these earthen structures has interposed anthrosols consisting of anthropic A horizons between the remaining natural soil units within the house remains. Juxtaposition of the anthropic soils with natural soil horizons will occur at the outer limits of the houses. Anthrosols are discussed in greater detail in the Antelope Dreamer site report. The subordinate departure "(anth)" is used to designate anthropic horizons identified in the excavation profiles of earthlodges at Buzzing Yucca. Detailed soil descriptions of selected test unit profiles can be found in Appendix C. Soil horizons recorded in the test excavations at the site are discussed below. Horizon nomenclature generally follows Birkeland (1984).

Extramural Tests. Tests 4, 5, and 7 exhibit a shallow, general A/C horizon sequence that is typical of Sansarc clays (cf. Schumacher 1987:79). The Test 4 profile contains a complete Sansarc sequence, consisting of A, AC, Cox, and Cr horizons (Figures 65 and 66B). The profiles of Tests 5 and 7 show a more limited Sansarc sequence, consisting of A/Cr and A/Cox horizons, respectively (Figures 67 and 68).

The soils represented in the Test 3 profile are somewhat of an anomaly. Much of the profile has been disturbed and mixed by an old tree pod (Figures 65 and 66A). A tree root, initially thought to be a post butt, was removed from the base of the test unit. No surface indications of the tree pod were apparent prior to the excavation of the test. The disturbed area consists of silty clay loam (SiCL). The apparently undisturbed portion of the profile exhibits an A horizon over a 2B. The A is a clay and the 2B is a silt loam (SiL). The 2B horizon covers the floor of the test unit. It is possible that the 2B horizon represents an episode of eolian deposition that is preserved in the immediate area of Test 3. Alternatively, the soils in Test 3, particularly the silt loam, may be largely a product of the growth of the tree and filling of the tree pod created by the falling of the tree. A more extensive profile is needed to resolve this problem. In the absence of additional information, it is probably best to view of the stratigraphy of Test 3 as a localized anomaly resulting from substantial disturbance by past tree growth.

Test 8 exhibits a moderately deep, general A/B sequence typical of the upper portion of Opal clays (cf. Schumacher 1987:76). Horizons recorded in the profile of Test 8 include an A, a Bw, and a Bk (Figure 69). Cox and Cr horizons are undoubtedly present at no great depth beneath the Bk horizon.

Tests 1-2 (House 5). The stratigraphy in Tests 1-2 is complex and unusual owing to the interruption of the natural stratigraphic sequence by the construction of an earthlodge (House 5) and its subsequent collapse (Figures 70 and 71). The surface soil consists of an A horizon formed in a very thin layer of loess (silt loam) that was apparently trapped in the house depression. Sansarc clays are present immediately beneath the loess, which

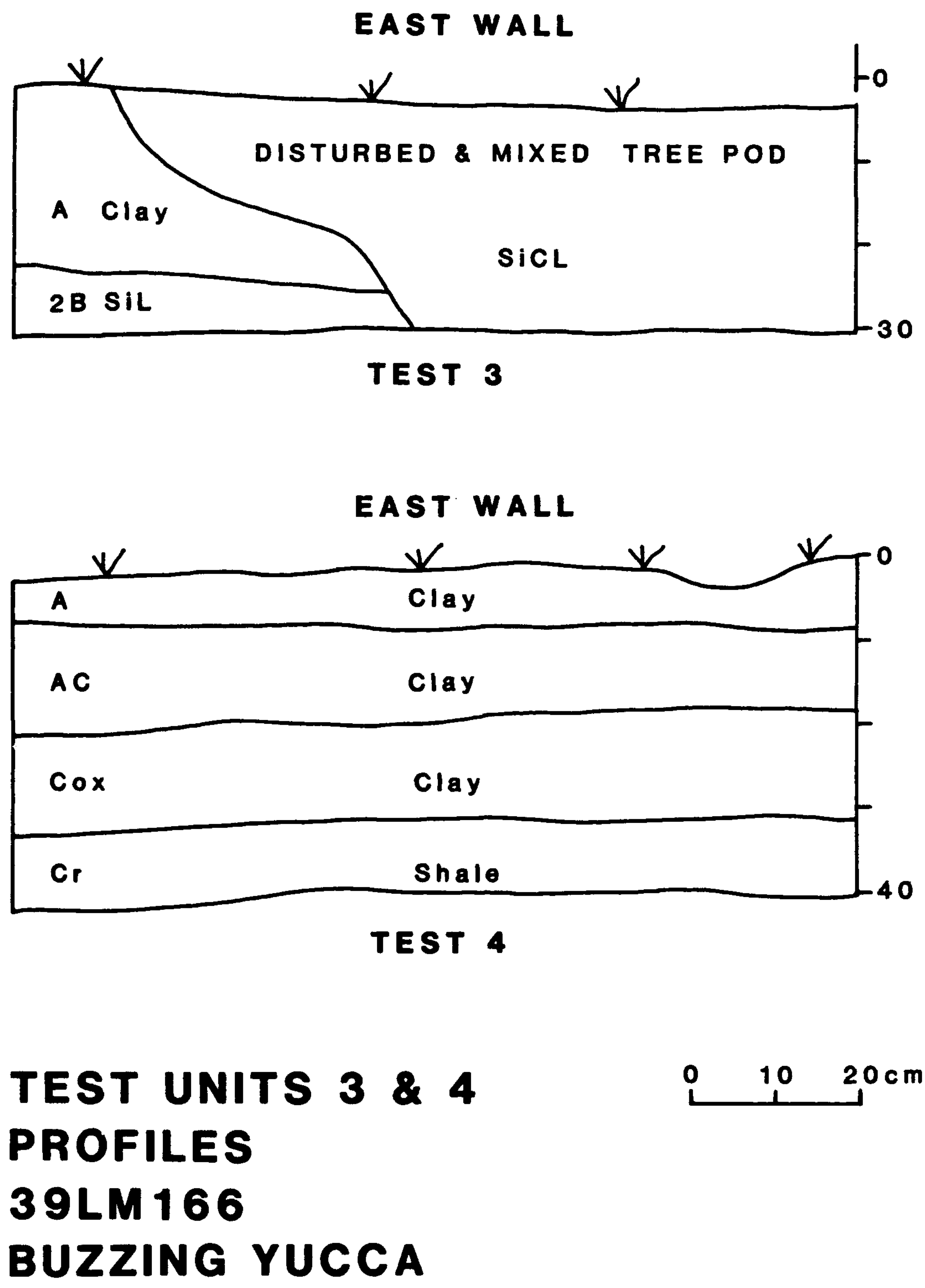
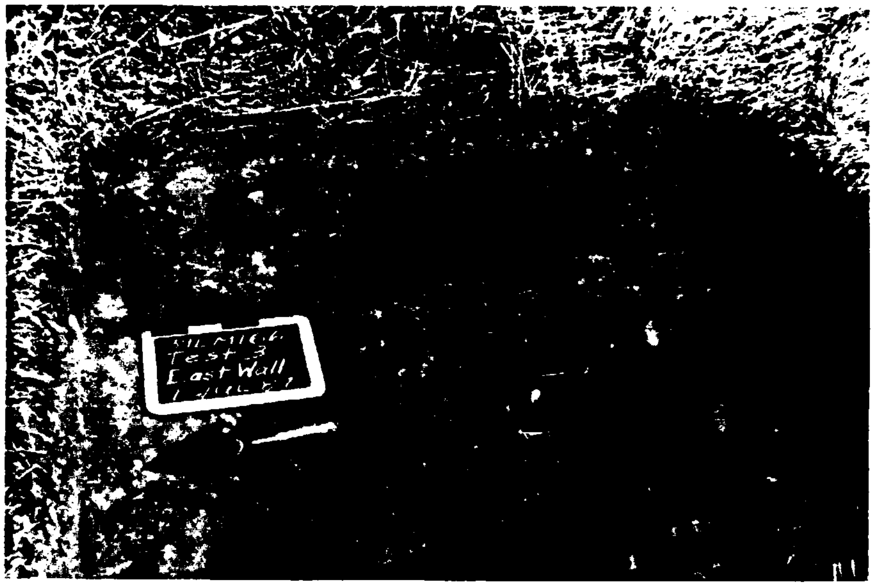
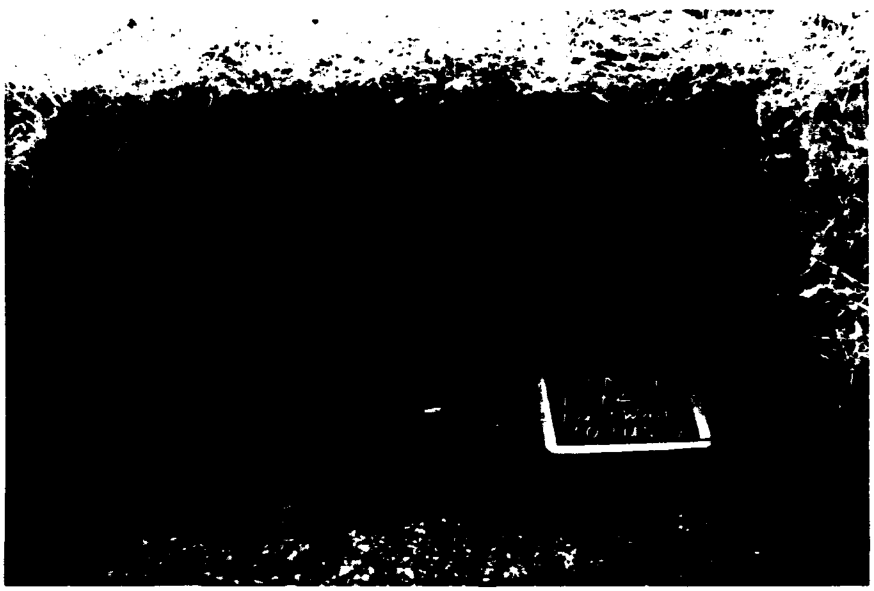


Figure 65. Profile Drawings of Tests 3 and 4, Buzzing Yucca Site (39LM166).



A



B

Figure 66. Profile Photos of Tests 3 and 4, Buzzing Yucca Site (39LM166). A: East wall of Test 3 (photo no. 3087, WCRM 1987). B: East wall of Test 4 (photo no. 3057, WCRM 1987).

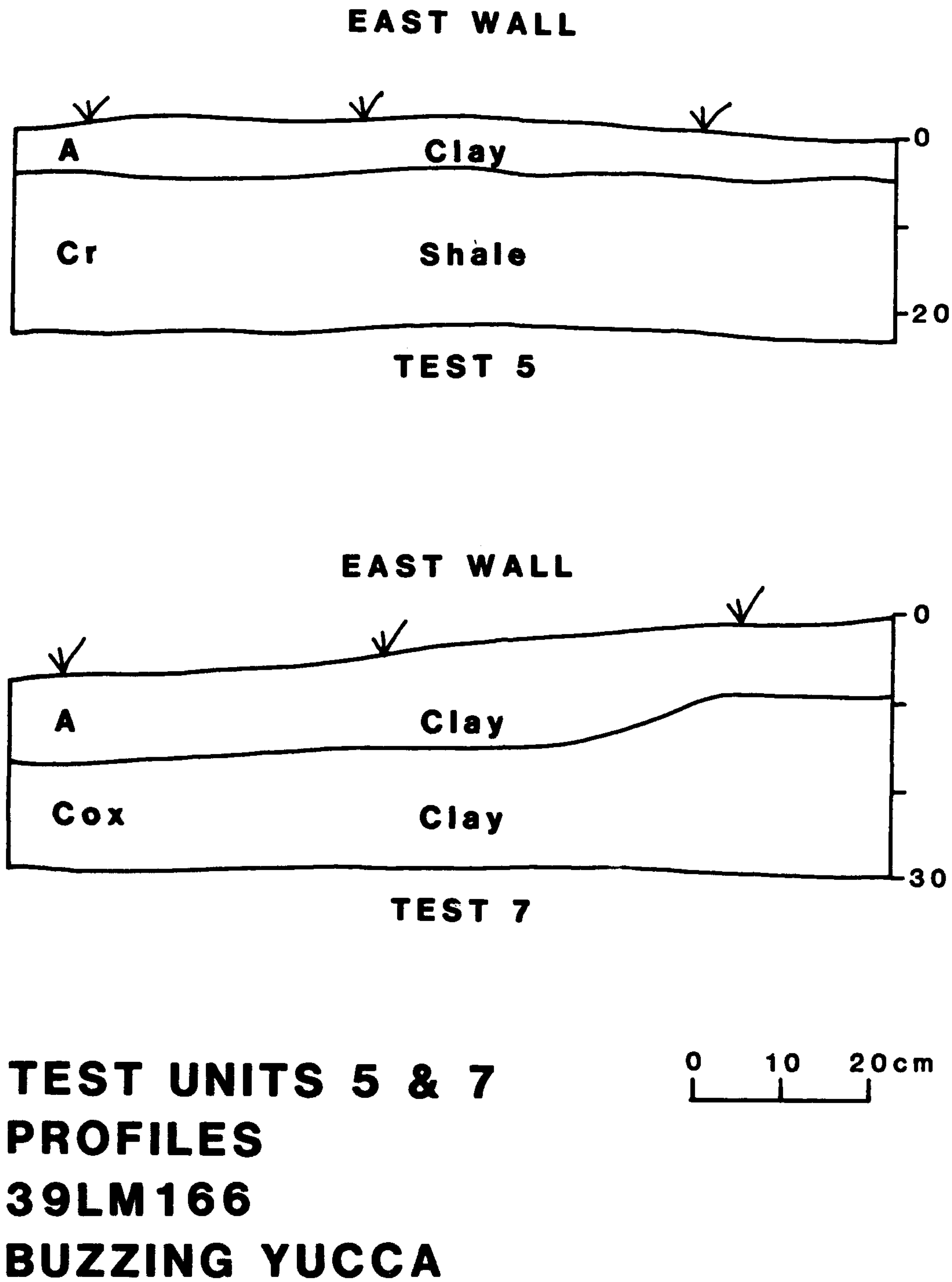
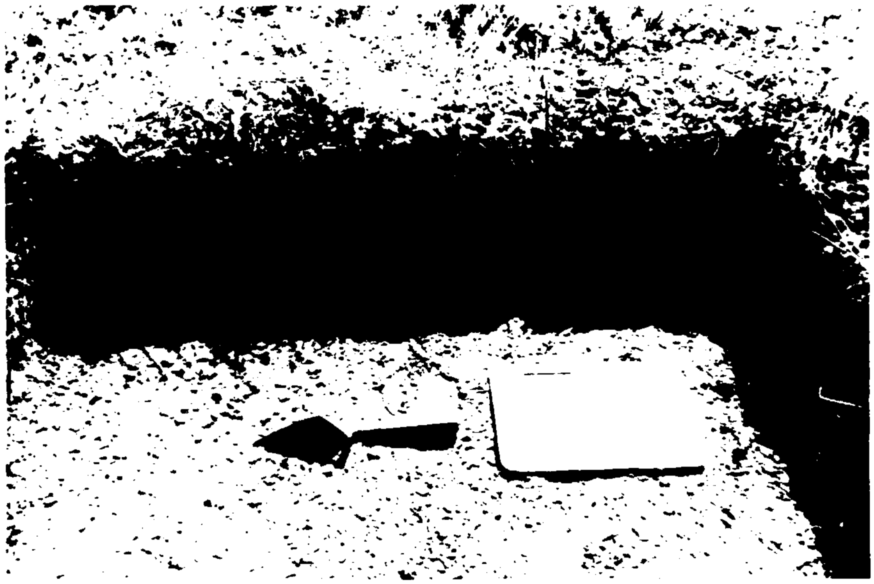
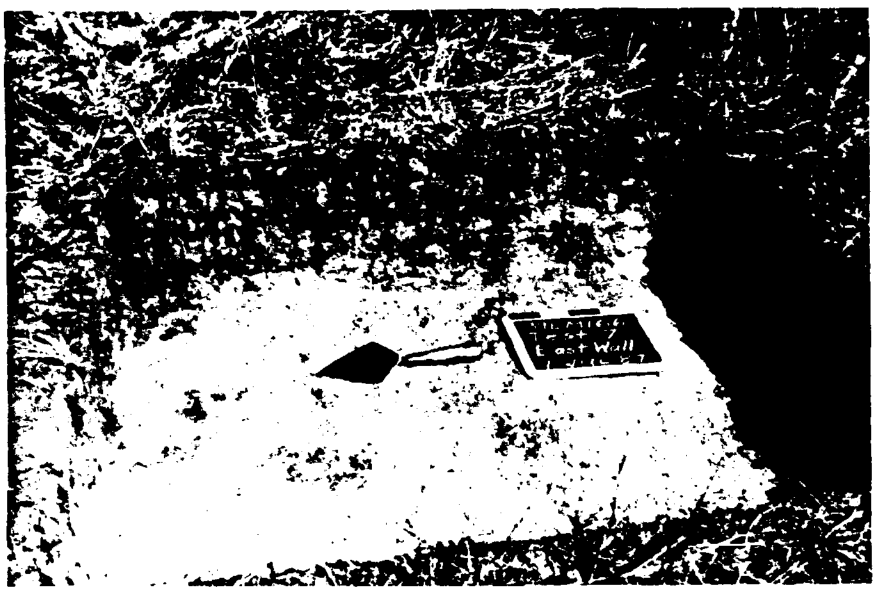


Figure 67. Profile Drawings of Tests 5 and 7, Buzzing Yucca Site (39LM161).

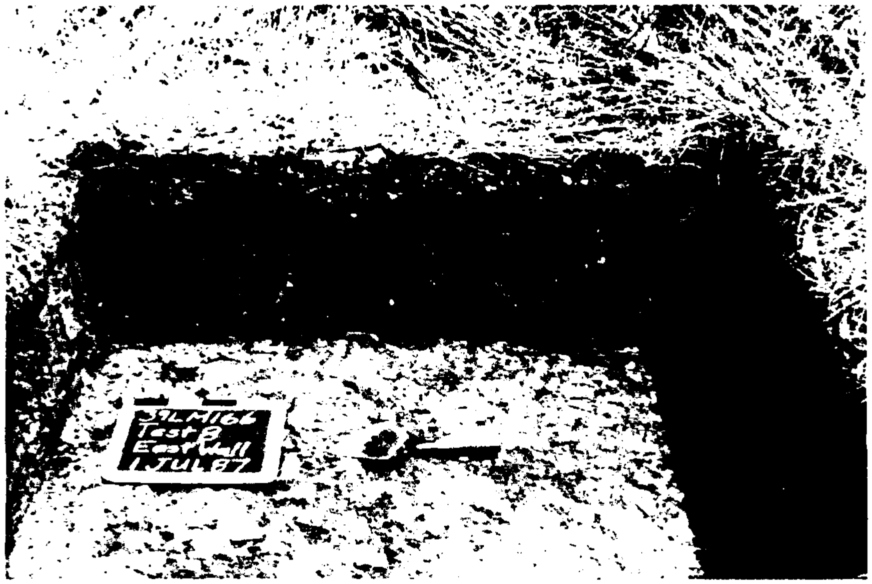


A



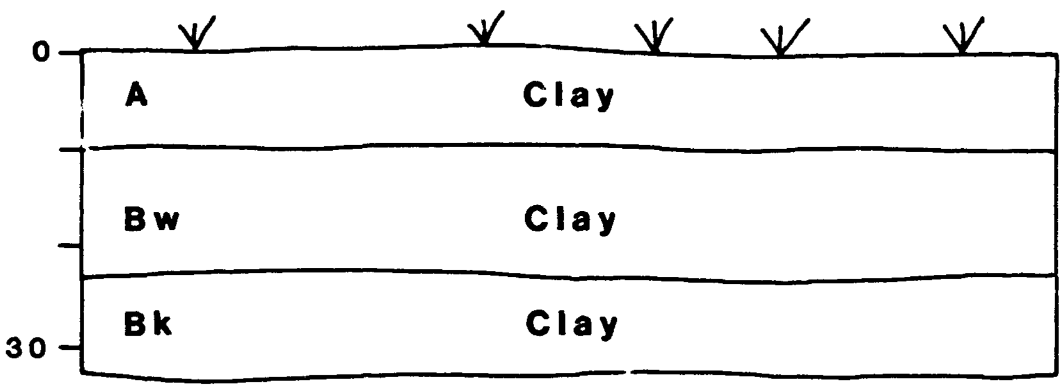
B

Figure 68. Profile Photos of Tests 5 and 7, Buzzing Yucca Site (39LM166). A: East wall of Test 5 (photo no. 3059, WCRM 1987). B: East wall of Test 7 (photo no. 3089, WCRM 1987).



A

EAST WALL



TEST UNIT 8 - PROFILE
39LM166
BUZZING YUCCA

0 10 20cm

B

Figure 69. Profile Photo and Drawing and Test 8, Buzzing Yucca Site (39LM166). A: Photo of east wall of Test 8 (photo no. 3083, WCRM 1987). B: Drawing of east wall of Test 8.

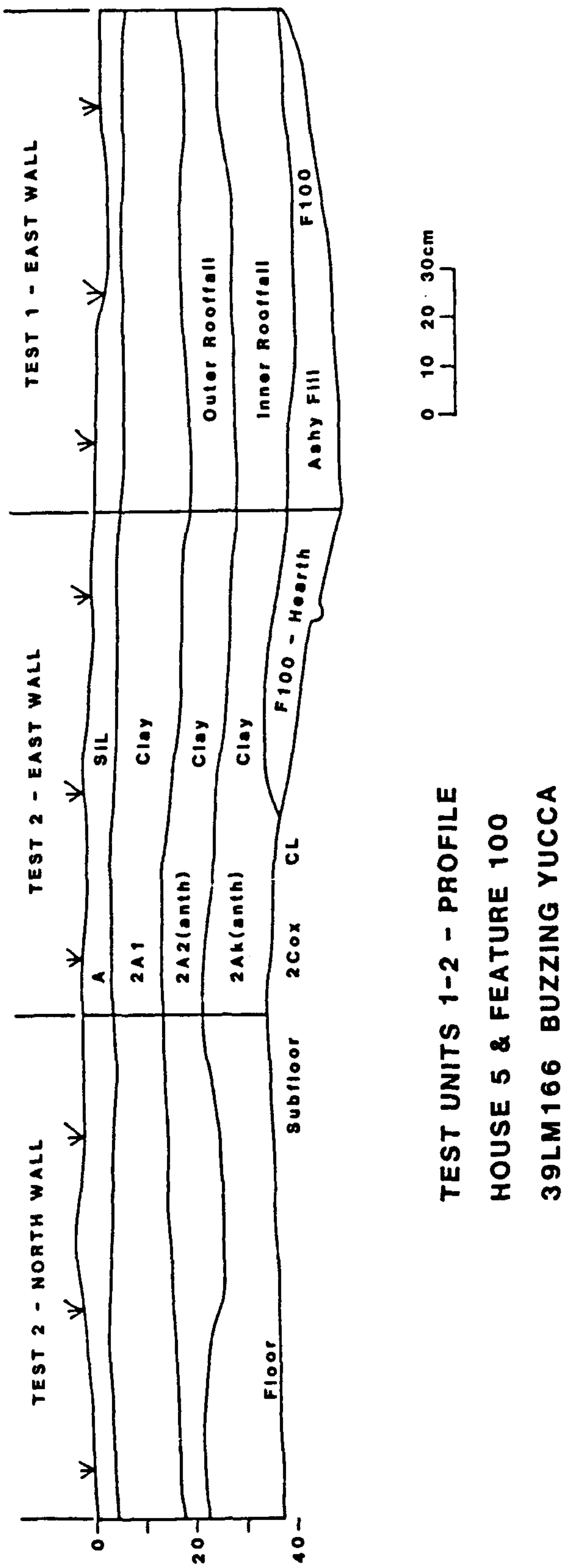
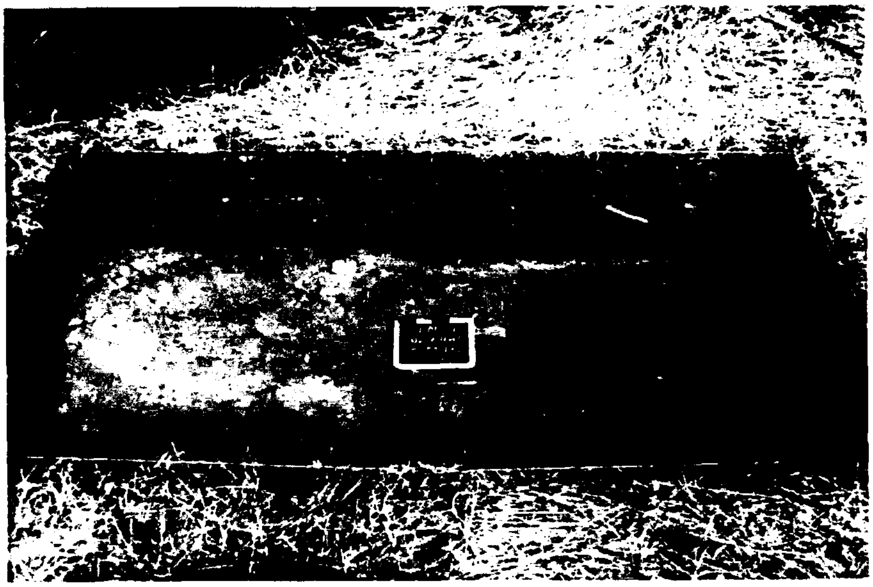


Figure 70. Profile Drawing of Tests 1-2, House 5, Buzzing Yucca Site (39LM166).



A

B

Figure 71. Profile Photos of Tests 1-2, House 5, Buzzing Yucca Site (39LM166). A: West wall of Tests 1-2, House 5 (photo no. 3073, WCRM 1987). B: North wall of Test 2, House 5 (photo no. 3074, WCRM 1987).

necessitates a shift in parent material nomenclature for the rest of the profile (e.g., A versus 2A) (Figure 70).

The 2A1 horizon is either a natural soil covering the remains of House 5 or the actual upper portion of the rooffall of the house. A definite determination could not be made based on the limited extent of the excavation. In retrospect, the formation of the 2A1 is probably due to a combination of natural and cultural processes: it is thought that this horizon consists of slopewash material from the perimeter of the house that washed into the depression formed by the collapse of the structure. The only real difference between the 2A1 and the underlying 2A2(anth), which clearly represents the outer rooffall zone, is in the structural grade of the two units: the structure of the 2A1 is recorded as weak, while the structure of the 2A2(anth) is recorded as moderate. The 2Ak(anth) represents the inner rooffall/floor zone of the house. The floor of the house rests on a 2Cox horizon. Apparently, a shallow house pit was dug into the Sansarc soil to the level of the 2Cox. The material removed from the house pit was then probably used as part of the earth blanket covering the house (i.e., the anthropic horizons).

The profile of F100, the central hearth of House 5, was also recorded in a portion of the profile of Tests 1-2. The fill of the hearth consists of a fine light olive gray to olive gray colored ashy material with a loamy texture. The hearth is interposed between the 2Ak(anth) and 2Cox horizons. Only slight indications of burning and charcoal flecking are present in the inner rooffall, indicating that the house was not destroyed by fire. The burning and charcoal that are present likely derive from the use of the hearth uncovered in the tests.

Test 6 (House 6). Test 6, excavated into House 6, shows much the same stratigraphic sequence as Test 1-2, with a few notable exceptions (Figures 72 and 73). No loess was observed over the remains of House 6. The entire sequence consists of clays, so a shift in parent material nomenclature is unnecessary. Like the 2A1 horizon in Tests 1-2, the A1 horizon in Test 6 may represent either a natural soil covering the remains of House 6 or the actual upper portion of the outer rooffall zone. The formation of the A1 horizon in slopewash from the perimeter of the collapsed structure seems to be the most plausible interpretation. The A2(anth) horizon is clearly the outer rooffall zone of the house. The Ak(anth) horizon comprises the inner rooffall/floor zone. It overlies a Bk horizon which forms the floor of the house. The presence of a Bk horizon beneath House 6 indicates a moderately deep Opal clay soil is present in the vicinity of this feature. The shallow pit of House 6 was apparently dug into the Opal clay to the level of the Bk. The material removed from this excavation was then probably used as part of the earth blanket covering the structure (i.e., the anthropic horizons).

The profile of F101, the central hearth of House 6, was also recorded in a portion of the profile of Test 6. The fill of the hearth consists of a fine pale olive colored ashy material with a loamy texture. It is very similar to the ashy fill of F100 in House 5, except that it is somewhat yellower in color. The hearth is interposed between the Ak(anth) and Bk horizons. As in House 5, only slight indications of burning and charcoal flecking are present in the inner rooffall of House 6. This, too, indicates that the house was not destroyed by fire, and the burning and charcoal that are present likely derive from the use of the hearth uncovered in the test.

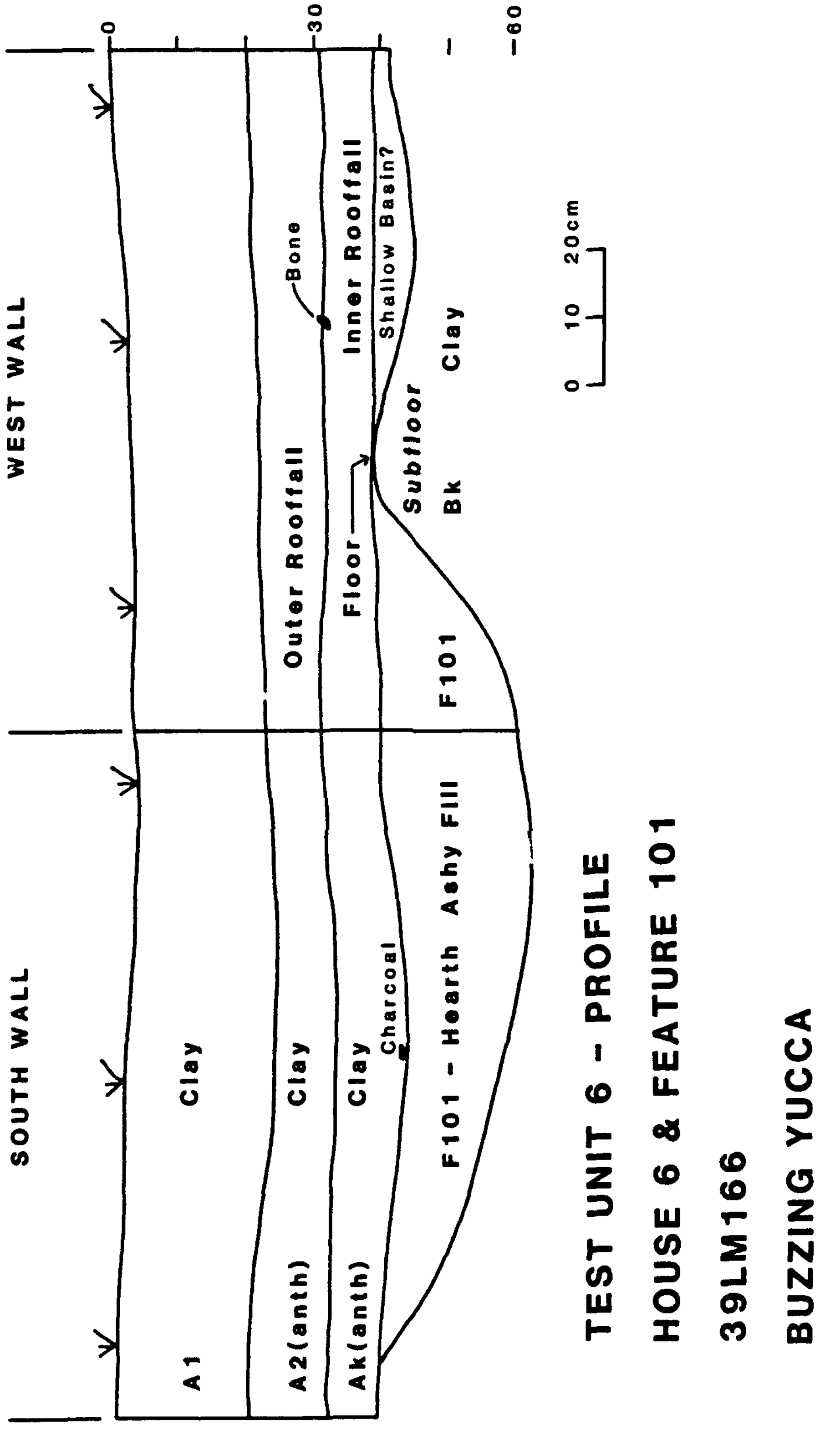
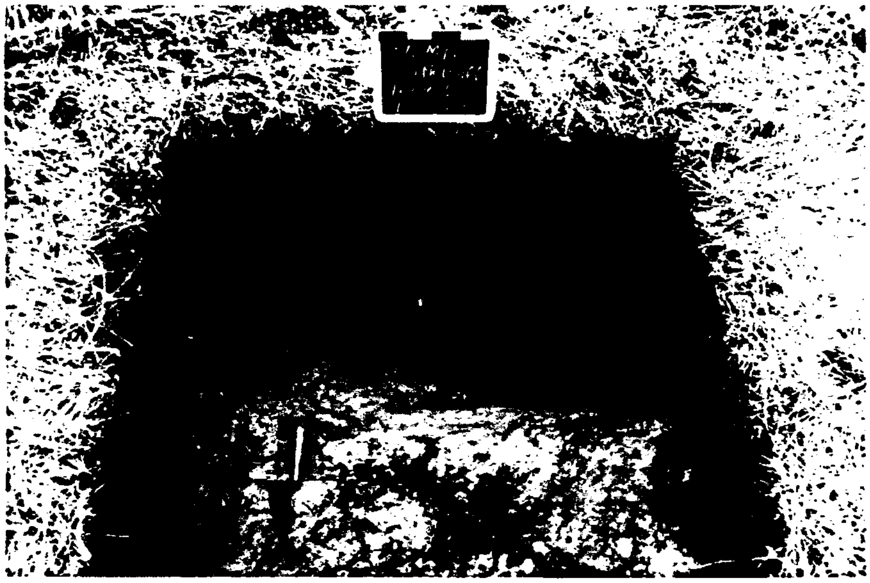
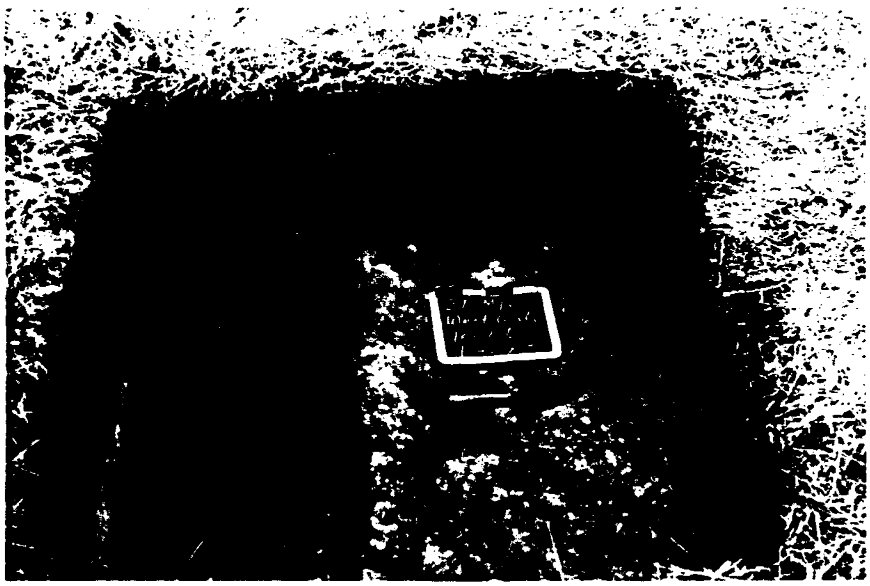


Figure 72. Profile Drawing of Test 6, House 6, Buzzing Yucca Site (39LM161).



A



B

Figure 73. Profile Photos of Test 6, House 6, Buzzing Yucca Site (39LM161).
A: South wall of Test 6, House 6 (photo no. 3079, WCRM 1987).
B: West wall of Test 6, House 6 (photo no. 3080, WCRM 1987).

Cultural Associations

Vertical distributions of artifacts in the intramural tests reveal that the Extended Coalescent occupation is clearly associated with the anthropic horizons of the house remains, from about 20-40 cm sd, as one would expect. Most artifactual debris was recovered from the inner rooffall/floor zone of the houses as well as from the subfloor hearths. However, lesser quantities of prehistoric artifacts were found throughout the intramural tests above the inner rooffall/floor zone. As was alluded to previously, a definite upper rooffall zone could not be isolated in the house tests on the basis of stratigraphy or artifact distributions.

No clear Extended Coalescent occupation zone was delimited in the extramural tests. This is largely attributable to the shrink/swell nature of the clayey soils at the site. Sansarc and Opal clays are montmorillonitic (Schumacher 1987:159). Montmorillonite clays, part of the smecite clay mineral group, have a high expansion and contraction potential as water is added or removed from the clay under varying moisture conditions (Birkeland 1984:97). Such shrinking and swelling under the variable moisture regime of the Lake Sharpe area would surely result in vertical artifact displacement and the obfuscation of prehistoric occupation surfaces. The addition of potential disturbance from burrowing animals further compounds the problem. Nevertheless, most artifacts from the extramural tests were found in the upper 10 cm of excavation in association with the surface A horizon. Therefore, it can be stated with some assurance that the Extended Coalescent occupation zone is a near-surface phenomenon in most extramural contexts at the site. Test 3 produced quantities of artifacts throughout its 30 cm depth. This is most likely a reflection of substantial localized disturbance from past tree growth, as was discussed above.

Archeological Components, Radiocarbon Dates, and Analytic Units

The Buzzing Yucca site is known to contain two archeological components on the basis of this research and previous research conducted at the site by UND. These are, in chronological order:

1. Recent, Historic (ca. late A.D. 1800s to mid-1900s); and

2. Plains Village, Extended Coalescent (ca. A.D. 1500-1675).

The historic component consists of a former homestead or farmyard occupation located principally in the southeastern part of the site. The Extended Coalescent variant occupation consists of a dispersed village settlement with at least two and possibly as many as three earthlodges. Widely scattered artifactual debris from the Extended Coalescent component is present over much of the site area. No particular significance is presently attached to the historic component, but it has not been purposely evaluated. The Extended Coalescent component, which is clearly of archeological significance, is the focus of these investigations.

No materials suitable for reliable radiocarbon dates were recovered from the test excavations at Buzzing Yucca. The age of the Extended Coalescent component is based solely on the general estimated time frame of the variant.

The main trust of the analysis of artifactual remains recovered from the test excavations at Buzzing Yucca is concerned with the evaluation of the Extended Coalescent component, particularly the content of extramural versus intramural contexts. Consequently, most data are organized and presented according to intramural and extramural analytic units. Artifacts attributable to the historic component were found only in the upper 20 cm of Test 6. These historic materials are readily identifiable and given separate treatment where appropriate. All other artifacts are assigned to the Extended Coalescent component.

Features

Two structural features consisting of the remains of earthlodges were tested at Buzzing Yucca. Tests 1-2 were placed near the center of Feature 5 (F5), herein designated House 5. Test 6 was placed near the center of Feature 6 (F6), herein designated House 6 (Figure 63). Feature numbers assigned by UND to the surface depressions left by the houses have been converted here to house numbers to facilitate discussion and provenience coding. These numbers should not be construed as meaning that as many as six houses are represented at the site. This procedure for house numbering was also used at all of the other sites exhibiting Plains Village architecture. The excavations into the house remains at Buzzing Yucca are too small to reveal any additional detailed information on the construction and configuration of these structures than is already available in the existing literature. Both are assumed to be circular earthlodges, "typical" of the Extended Coalescent variant (cf. Lehmer 1971:115-116). Evidence of extensive burning was not observed in the rooffall of either structure, and neither is thought to have been destroyed by fire.

House 5 and Associated Features.

The depression left by the collapse of House 5 is circular to oval shaped, measuring approximately 11.0 m north-south by 9.0 m east-west. The depression is fairly shallow, reaching a maximum depth of about 40 cm below the surrounding ground surface (Picha and Toom 1984). Hand coring in the depression yielded evidence of a large hearth near the center of the house floor. Tests 1-2, combined into a 1 X 2 m excavation, were placed near the center of the depression over the hearth location.

The central hearth of House 5, designated Feature 100 (F100), was the only feature identified in Tests 1-2. F100 was only partially exposed by the tests. Most of the hearth was uncovered and excavated, but portions of it extended beyond the tests to the east and south. The excavated portion consists of a subfloor, double basin-shaped hearth with maximum dimensions of about 197 cm north-south by 98 cm east-west (Figures 74, 75, and 76A). It reached a maximum depth of approximately 15 cm below the floor level. The excavated volume of F100 is estimated at about 0.15 cubic meters. F100 covered most of floor area of House 5 in Tests 1-2. Consequently, the bulk of the artifacts recovered from the tests relate to the use of this feature. Profile illustrations of F100 are provided in Figures 70 and 71.

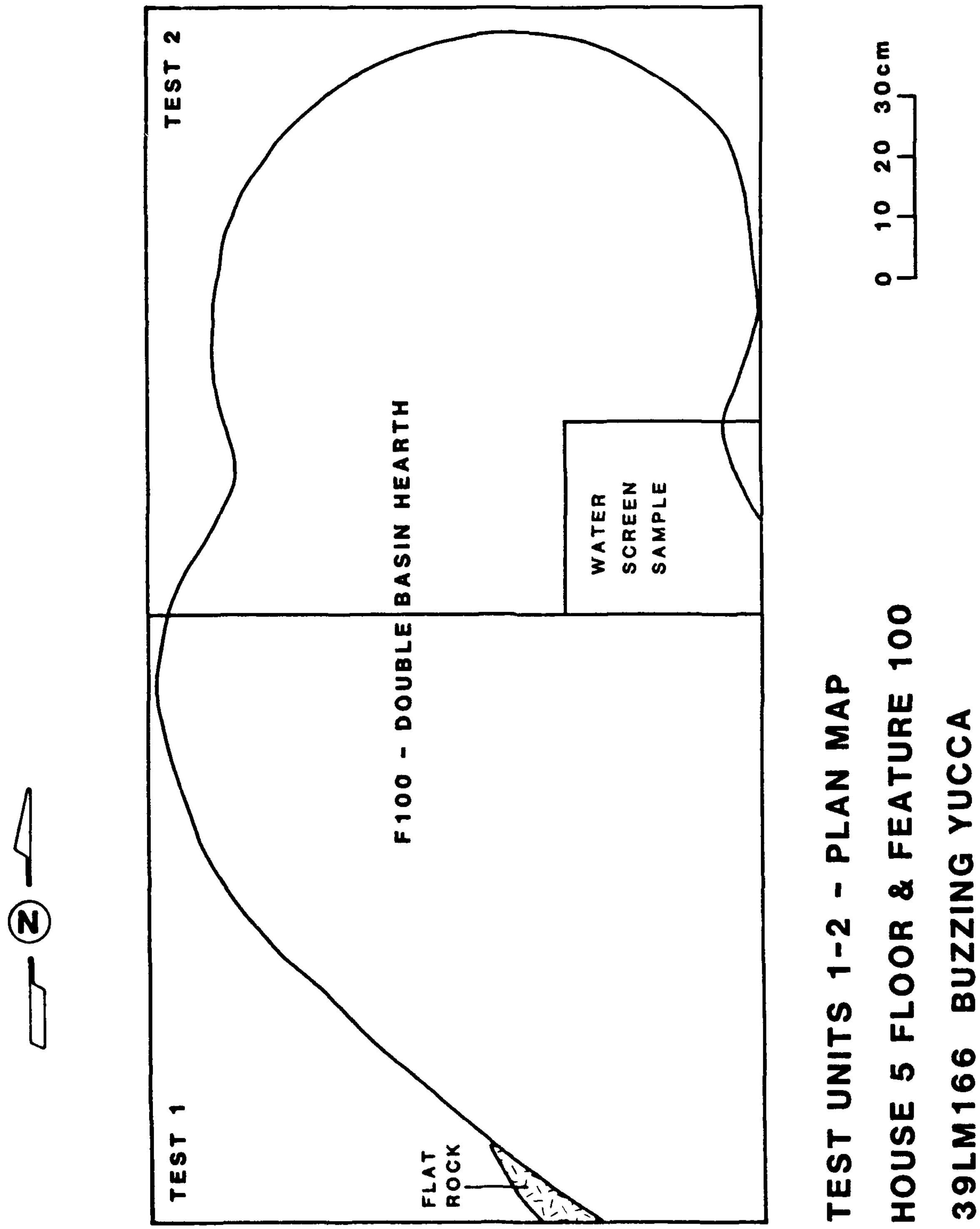
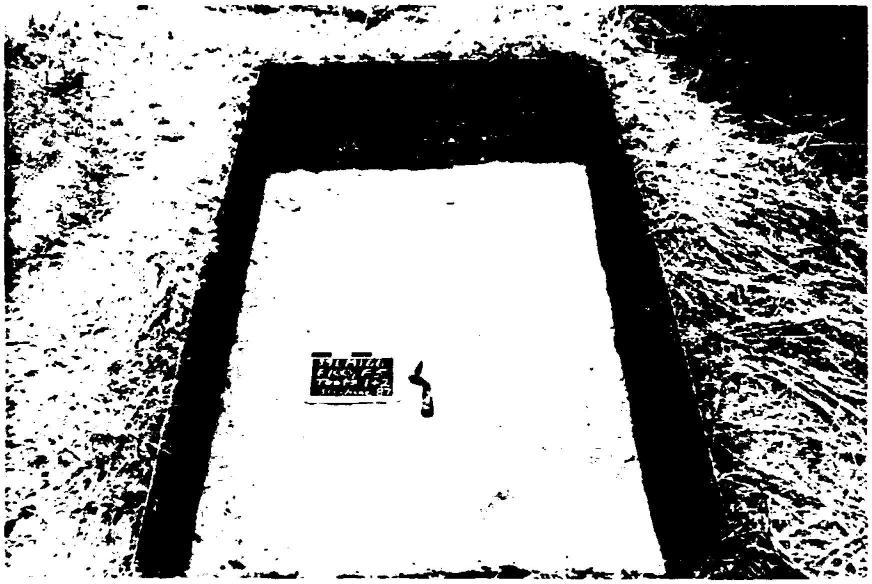
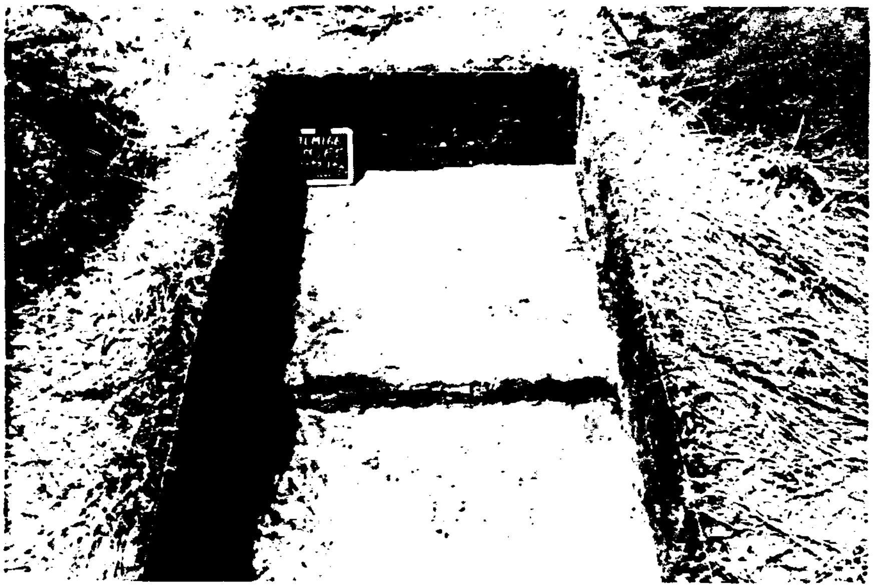


Figure 74. Plan View Drawing of Feature 100 (Basin Hearth), Tests 1-2, Floor of House 5, Buzzing Yucca Site (39LM166).

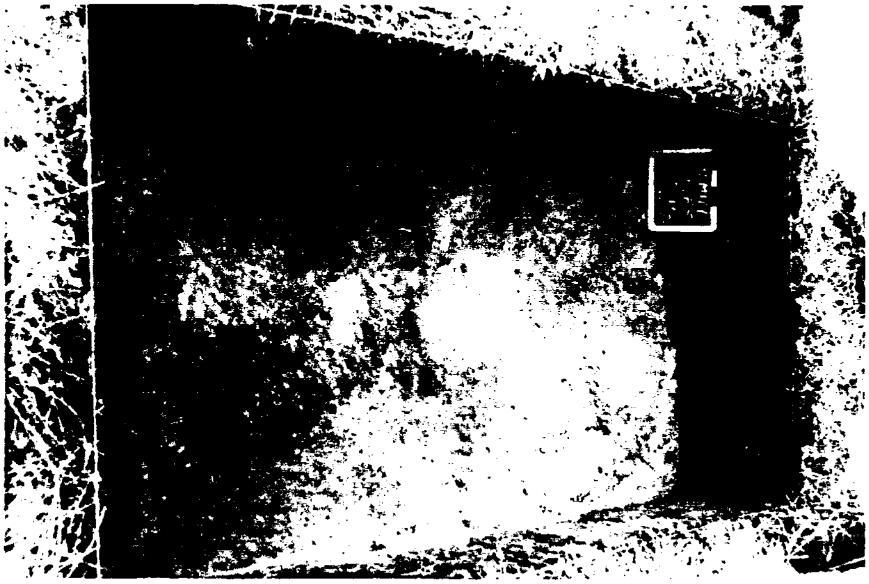


A



B

Figure 75. Photos of Feature 100 (Basin Hearth), Tests 1-2, Floor of House 5, Buzzing Yucca Site (39LM166). A: Feature 100 before excavation, north view (photo no. 3065, WCRM 1987). B: Feature 100 profile/ partial excavation, north view (photo no. 3067, WCRM 1987).



A

B

Figure 76. Photos of Features 100 and 101 (Basin Hearths), Buzzing Yucca Site (39LM166). A: Feature 100, Tests 1-2, House 5 Floor, after excavation, north view (photo no. 3069, WCRM 1987). B: Feature 101, Test 6, House 6 Floor, after excavation, southwest view (photo no. 3077, WCRM 1987).

The fill of the hearth consisted almost entirely of a fine light olive gray to olive gray colored ash. Virtually no wood charcoal was found in the hearth, and it is thought that the light colored ash reflects the use of some fuel other than wood. The ashy fill of F100 was mounded several centimeters above the floor level. Copious amounts of ash, some of which was well consolidated, were present in the hearth basin as well as in the inner rooffall zone just above the hearth. Large quantities of highly fragmented native ceramic sherds and some fire-cracked rock were also recovered from the hearth and the levels just above it where mounded ash was present. Other classes of artifacts such as bone and chipped stone were not particularly numerous. A large, flat stone, probably used as an anvil of some sort, was found on the southern edge of the hearth (Figure 74). The stone extended some distance into the south wall of Test 1; it was not collected.

One could speculate that the last use of F100 involved the firing of native ceramic vessels using a fuel that produced little or no charcoal residue. The fuel used in F100 is unknown but dried bison dung may be a possibility. However, ethnographic accounts indicate that tree bark (mainly cottonwood) and elm-wood were used as fuel by Middle Missouri villagers to fire ceramic vessels (Wilson 1977; Gilmore 1925).

House 6 and Associated Features

The depression left by the collapse of House 6 is roughly circular, measuring approximately 8.2 m north-south by 7.9 m east-west. It, too, is fairly shallow, reaching a maximum depth of about 30 cm below the surrounding ground surface (Picha and Toom 1984). Hand coring in the depression yielded evidence of a hearth near the center of the house floor. Test 6 was placed near the center of the depression over the hearth location.

The central hearth of House 6, designated Feature 101 (F101), was the only feature identified in Test 6. Like F100, F101 was only partially exposed by the test; the bulk of the feature appears to extend beyond the south and west walls of the test. The excavated portion consists of a subfloor, basin-shaped hearth with dimensions of about 46 cm north-south by 94 cm east-west (Figures 77 and 76B). It reached a maximum depth of approximately 23 cm below the floor level. The excavated volume of F100 is estimated at about 0.07 cubic meters. F101 covered much of floor area of House 6 in Test 6. Consequently, the majority of the artifacts recovered from the test relate to the use of this feature. Profile illustrations of F101 are provided in Figures 72 and 73.

The fill of the F101 is very similar to that of F100. It consisted almost entirely of a fine pale olive to olive colored ash. Virtually no wood charcoal was found in the hearth, and it is thought that the light colored ash reflects the use of some fuel other than wood. Copious amounts of unconsolidated ash were present in the hearth basin. Little of the ash was recoverable, however, because of its largely unconsolidated state. Samples of ash from both F100 and F101 are maintained in the site collection. The hearth fill yielded a large quantity of highly fragmented native ceramic sherds and little else. An episode of final use similar to that of F100 is proposed for F101.

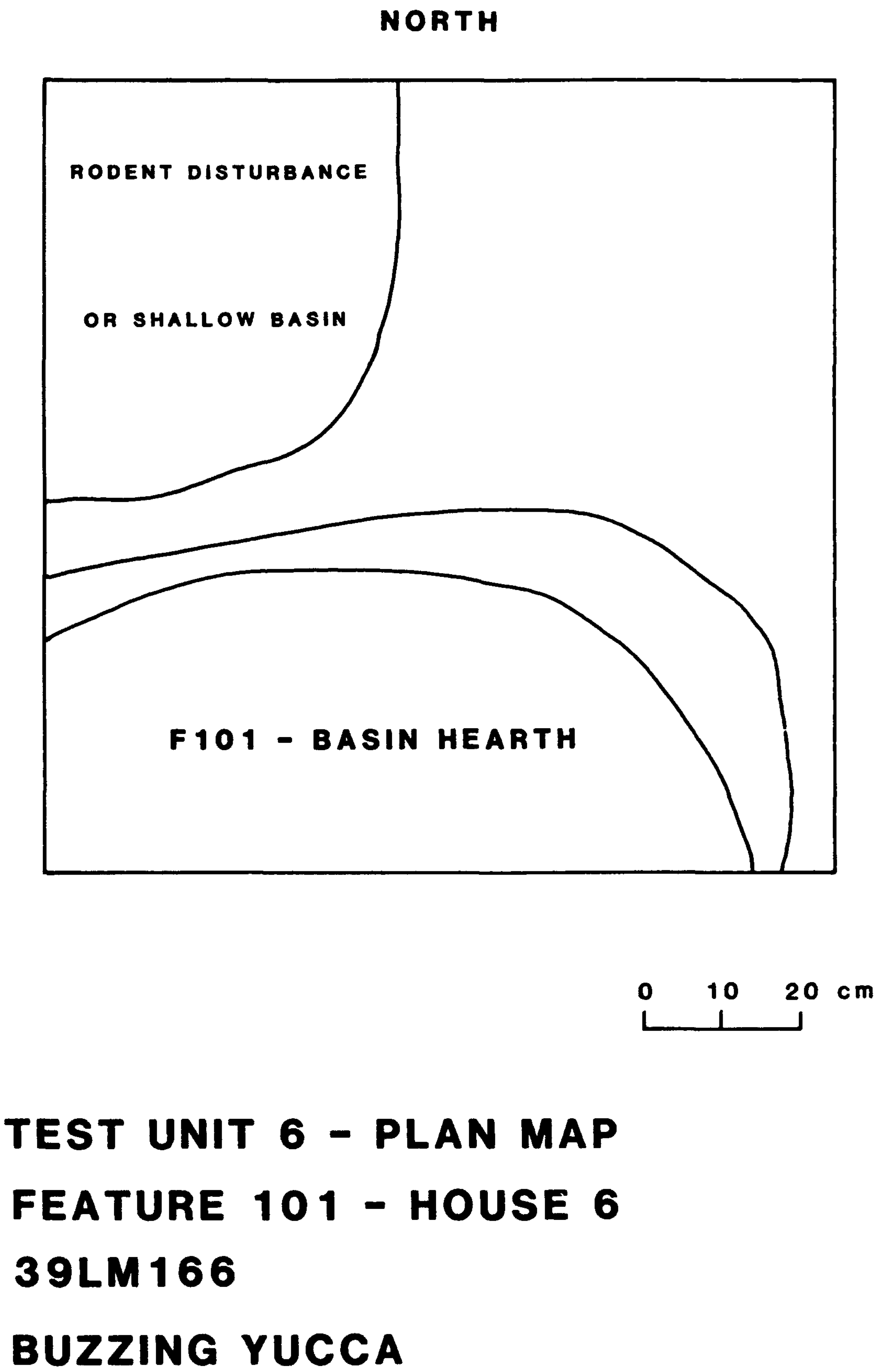


Figure 77. Plan View Drawing of Feature 101 (Basin Hearth), Test 6, Floor of House 6, Buzzing Yucca Site (39LM166).

Other Features

Other features recorded at the site by UND, including the historic depressions (F8-9) and the smaller, presumably prehistoric depressions (F1-4), were not tested or further investigated in any way. The historic component is not considered to be archeologically significant, so the specific testing of this component is unwarranted within the context of these investigations. While the prehistoric component is unquestionably significant, the smaller features that may relate to it were purposely avoided so as not to disturb any potential human burials. The archeological excavation of native burials, no matter how well intentioned, is currently a very sensitive issue among certain Indian groups. The testing of the Buzzing Yucca site was planned with this issue in mind.

Feature 7, another possible earthlodge depression recorded by UND, was also not tested due to the limited scope of the project. It is thought that this feature does in fact represent the remains of an Extended Coalescent house considering the results of the tests into Features 5 and 6.

Native Ceramics

Native ceramic sherds recovered from test excavations at Buzzing Yucca total 1540 G1-3 sized specimens, including 1506 body sherds and 34 rim sherds. There is no evidence of multiple prehistoric components in the sample, and all of the native ceramics from the site are attributed to the village component. The Buzzing Yucca ceramics are typical of an Extended Coalescent variant assemblage (cf. Johnson 1980), and they are the primary criteria for the identification of the village component as Extended Coalescent.

The ceramic sample is highly fragmented. No complete or even partially complete and reconstructable vessels are present in the collection. Most sherds are from globular-shaped jars of various sizes, several of which appear to have been relatively small. A few miniature vessels and bowls may also be represented, but the small size of the sherds makes their positive identification problematic. Overall, the ceramics from the site are relatively thin and very well made. The paste is compact and tempered with crushed granite (grit). Brown and buff colors predominate; a few gray and grayish black sherds are also present in the sample.

Body Sherds

The body sherd sample from Buzzing Yucca consists of 1506 specimens, including 14 G1, 247 G2, and 1245 G3 sherds. Of this number, 303 sherds were recovered from extramural test units, 1021 were recovered from the House 5 tests, and 182 were found in the House 6 test (Table 54).

Body sherd surface treatments were recorded for all G1-2 sized specimens (Table 55). Classifiable body sherds primarily exhibit plain/smoothed (41.8%), simple stamped (33.0%), and decorated (22.3%) surface treatments. Decoration consists of trailed/incised lines on shoulder sherds. Six brushed body sherds are also present in the sample (2.9%). An additional 55 body sherds were recorded as indeterminate. The distribution of body sherd

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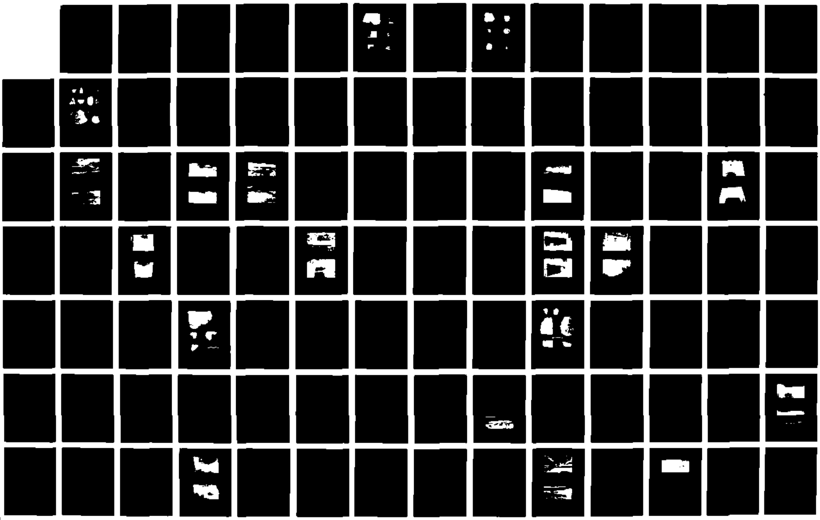

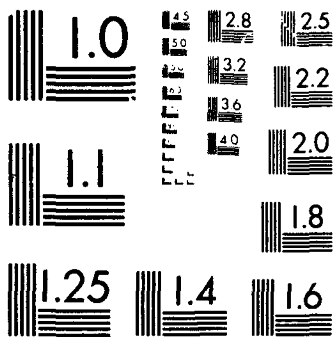

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NATIONAL BUREAU OF STANDARDS-1963-A

Table 54. Native Ceramic Body Sherd Size Grade Data by Test Unit and Context, Buzzing Yucca Site (39LM166).

Context/ Test Unit		Size Grade Grade 1	Grade 2	Grade 3	Total
Extramural Tests					
3	n	4	29	139	172
	%	2.3	16.9	80.8	100.0
4	n	-	2	11	13
	%	-	15.4	84.6	100.0
5	n	-	-	3	3
	%	-	-	100.0	100.0
7	n	-	8	102	110
	%	-	7.3	92.7	100.0
8	n	-	-	5	5
	%	-	-	100.0	100.0
Subtotal	n	4	39	260	303
	%	1.3	12.9	85.8	100.0
House 5 Tests					
1	n	5	86	331	422
	%	1.2	20.4	78.4	100.0
2	n	5	104	490	599
	%	0.8	17.4	81.8	100.0
Subtotal	n	10	190	821	1021
	%	1.0	18.6	80.4	100.0
House 6 Test					
6	n	-	18	164	182
	%	-	9.9	90.1	100.0
Total	n	14	247	1245	1506
	%	0.9	16.4	82.7	100.0

Table 55. Native Ceramic Body Sherd Surface Treatment Data by Test Unit and Context, Size Grades 1 and 2 Only, Buzzing Yucca Site (39LM166).

Test Unit		Plain/ Smoothed	Simple Stamped	Brushed	Decorated	Total Class.	Indet.	Total
Extramural Tests								
3	n	11	10	-	8	29	4	33
	%*	37.9	34.5	-	27.6	100.0	-	-
4	n	-	1	-	1	2	-	2
	%	-	50.0	-	50.0	100.0	-	-
5	n	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-
7	n	4	-	3	-	7	1	8
	%	57.1	-	42.9	-	100.0	-	-
8	n	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-
Sub-total	n	15	11	3	9	38	5	43
	%	39.5	28.9	7.9	23.7	100.0	-	-
House 5 Tests								
1	n	30	25	-	20	75	16	91
	%	40.0	33.3	-	26.7	100.0	-	-
2	n	32	30	3	15	80	29	109
	%	40.0	37.5	3.8	18.8	100.1	-	-
Sub-total	n	62	55	3	35	155	45	200
	%	40.0	35.5	1.9	22.6	100.0	-	-
House 6 Test								
6	n	9	2	-	2	13	5	18
	%	69.2	15.4	-	15.4	100.0	-	-
Total	n	86	68	6	46	206	55	261
	%	41.8	33.0	2.9	22.3	100.0	-	-

*Percentages are calculated based on the total number of classifiable sherds; indeterminate body sherds are excluded from percentage calculations.

surface treatments among the various intramural and extramural contexts at the site does not differ substantially from the overall site totals (Table 55).

Maximum thicknesses for a sample of G2 body sherds (catalog no. 104, n=48) from the rooffall/floor zone of House 5 were also recorded. A mean value of 2.9±0.8 mm was computed for these specimens. This value is considerably lower than the mean maximum thickness of 4.6±0.8 mm recorded for the Extended Coalescent component at the West Bend site (39HU83), and the mean maximum thickness of 5.6±1.0 mm recorded for the Initial Middle Missouri component at the Antelope Dreamer site (39LM146). The overall extreme thinness of the Buzzing Yucca sherds is likely the product of a number of relatively small-sized vessels that are represented in the sample. What ever the case, body sherd surface treatment and thickness data support an Extended Coalescent interpretation (cf. Johnson 1980). Extended Coalescent ceramics are generally the thinnest and best made of any of the Plains Village variants in the Middle Missouri subarea of South Dakota.

Rim Sherds and Vessels

Rim sherds from the test excavations at Buzzing Yucca total 34 specimens, including 2 G1, 16 G2, and 16 G3 rims. After matching, the 34 rims were found to represent a total of 24 vessels. Classifiable rims in the sample consist of various types of Talking Crow ware (50.0%), Iona ware (37.5%), and La Roche group (12.5%) vessels (Table 56). Talking Crow and Iona wares are common elements of Extended Coalescent variant ceramic assemblages, although they are also found in Post-Contact Coalescent collections, especially Talking Crow ware, certain types of which are considered to be diagnostic of the Post-Contact variant (e.g., Hoffman 1968; Johnson 1980; Smith 1975, 1977; Smith and Grange 1958; Smith and Johnson 1968). The Talking Crow Straight Rim type identified here has a relatively broad temporal distribution, spanning the Initial, Extended, and Post-Contact variants of the Coalescent tradition (Johnson 1980:68; Smith 1977:56, 59). The La Roche ceramic group is associated exclusively with Extended Coalescent components (Hoffman 1967, 1968; Johnson 1980). Other evidence of a Post-Contact component, or evidence of multiple Plains Village components, is entirely lacking in the Buzzing Yucca data, so the presence of Talking Crow, Iona, and La Roche ceramics in the collection is taken to be indicative of an Extended Coalescent occupation.

Descriptions of the ceramic types identified in the Buzzing Yucca sample are presented in the following paragraphs. Selected specimens are illustrated in Figures 78 and 79.

Talking Crow Straight Rim. Vessels 1, 3, 5, 15, 18, 19, 21, 23; n=8; Figure 78A-C.

Ware: Talking Crow Type: Talking Crow Straight Rim
Rim form: straight/curved.
Exterior rim decoration: undecorated.
Lip decoration: undecorated.
Decoration motif: not applicable.
Exterior rim surface treatment: plain/smoothed (n=5) or simple stamped (n=3).
Lip form: unthickened, rounded or flat.

Table 56. Native Ceramic Wares and Types, Buzzing Yucca Site (39LM166).

Ware	Ware* n	Ware* %	Type	Type n	Type %
Talking Crow	8	50.0	Talking Crow Straight Rim	8	100.0
Iona	6	37.5	Iona S-Rim	4	66.7
			Cadotte Collared	2	33.3
Subtotal, Iona Ware				6	100.0
La Roche (Group)	2	12.5	La Roche Horizontal Incised	2	100.0
Indeterminate	8	0.0	Indeterminate and Unclassified	8	100.0
Total	24	100.0		24	100.0

*Ware percentages include classifiable rims/vessels only.

All of the Talking Crow ware vessels are of the Talking Crow Straight Rim type (cf. Smith 1977:58-59). Talking Crow Straight rims are referred to as Class 2, Variety 2 rims in the Extended Coalescent assemblage from the La Roche site (Hoffman 1968:41). The type was originally defined for a number of Extended and Post-Contact coalescent components in the lower Big Bend region (cf. Johnson 1980).

Iona S-Rim. Vessels 10, 12, 17, 22; n=4; Figure 78D-F.

Ware: Iona Type: Iona S-Rim
Varieties: A (n=1), C/B (n=2), D (n=1).
Rim form: S-rim.
Exterior rim decoration: incised/trailed or undecorated.
Decoration motif: horizontal lines (n=1), horizontal and diagonal lines (n=2), or undecorated (n=1).
Lip decoration: tool impressed.
Exterior rim surface treatment: plain/smoothed.
Lip form: unthickened, flat (n=3) or thickened, T-shaped (n=1).

Figure 78. Photos of Native Ceramic Rim Sherds, Buzzing Yucca Site (39LM166).
A-C: Talking Crow Straight Rim. D-F: Iona S-Rim.

The Iona S-Rim type is rather difficult to describe succinctly because it encompasses a variety of different attributes and is subdivided into four varieties on the basis of decoration (or lack of decoration) on the exterior rim and decoration motif (cf. Smith 1977:61; Smith and Grange 1958:101; Smith and Johnson 1968:18-19). Variety A specimens exhibit a series of horizontally incised or trailed lines; Variety B specimens have trailed or incised lines in a repeated herringbone motif; Variety C specimens, which are sometimes too small to distinguish from Variety B, exhibit trailed or incised lines in opposing triangular plats; and Variety D specimens are undecorated (Smith and Johnson 1968:19). One Iona S-Rim in the Buzzing Yucca sample is Variety A, two are too small to distinguish between Varieties C and B (i.e., B/C), and one is Variety D.

The decorated varieties of Iona S-Rim are listed as Class 3 rims in the Extended Coalescent ceramic assemblage from the La Roche site (Hoffman 1968:41). The undecorated variety is listed as Group 2 rims in the Extended Coalescent ceramic assemblage from the Molstad site (Hoffman 1967:34-35). Iona ware and its various types, including Cadotte Collared, were originally defined for a number of Extended and Post-Contact coalescent components in the lower Big Bend region (cf. Johnson 1980; Smith 1977:60).

Cadotte Collared. Vessels 8, 16; n=2; Figure 79A-B.

Ware: Iona   Type: Cadotte Collared.
Rim form: S-rim (collared).
Exterior rim decoration: incised/trailed.
Decoration motif: diagonal (n=1) or horizontal (n=1) lines.
Lip decoration: tool impressed.
Exterior rim surface treatment: plain/smoothed.
Lip form: unthickened, flat or rounded.

Cadotte Collared rims are listed under Group 8 rims in the Extended Coalescent ceramic assemblage from the Molstad site (Hoffman 1967:42-43). The horizontally incised decoration motif was not identified in the original definition by Smith and Grange (1958:15-16); it was later added to the type by Hoffman in the Molstad site report. The type Cadotte Collared was originally defined for a number of Extended Coalescent and Post-Contact Coalescent components in the lower Big Bend region (cf. Johnson 1980; Smith 1977:60).

La Roche Horizontal Incised. Vessels 13, 14; n=2; Figure 79C.

Ware: La Roche Group   Type: La Roche Horizontal Incised
Variety: Wheeler
Rim form: straight/curved.
Exterior rim decoration: incised/trailed.
Decoration motif: horizontal lines.
Lip decoration: tool impressed.
Exterior surface treatment: plain/smoothed.
Lip form: unthickened, rounded or flat.

Vessel rims of the Wheeler variety of the La Roche Horizontal Incised type are referred to as Class 1, Variety 2 rims in the ceramic collection from the Extended Coalescent component at the La Roche site (Hoffman 1968:40). The

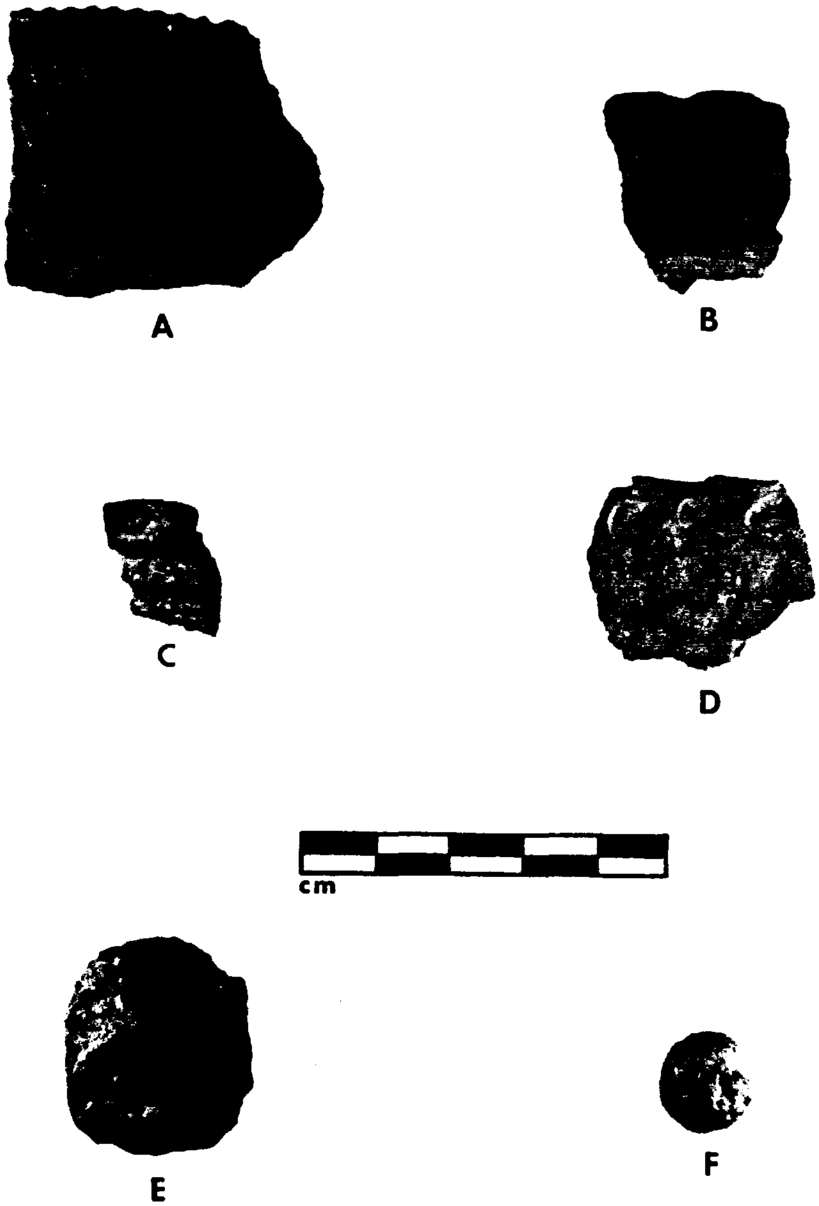


Figure 79. Photos of Native Ceramic Rim Sherds and Other Ceramic Artifacts, Buzzing Yucca Site (39LM166). A-B: Cadotte Collared. C: La Roche Horizontal Incised. D: Indeterminate/unclassified. E: Amorphous ceramic object (pottery burnishing tool?). F: Small ceramic ball.

type, part of the La Roche group, was originally defined for Extended Coalescent ceramics from the Molstad site (Hoffman 1967:38-41). The Wheeler variety of the type exhibits unthickened lips, while the Iona variety has thickened or filleted lips (Hoffman 1968:39-40).

Indeterminate. Vessel numbers 2, 4, 6, 7, 9, 11, 20, and 24 (n=8) are too fragmentary for reliable classification. They primarily consist of small lip fragments. One indeterminate specimen (vessel 6) of an unknown or unidentified type exhibits broad tool impressions on the lip and exterior rim (Figure 79D). The rim form of this specimen cannot be determined because of longitudinal splitting.

Other Formed Ceramic Objects

Two unusual native ceramic objects were recovered from the hearth (F100) in House 5. One is a small fired clay ball (Figure 79F) and the other is an amorphous object of fired clay (Figure 79E). Both are made of untempered clay. The ball exhibits three small, shallow punctations or holes in its surface. The amorphous object has several similar holes in its surface. It is thought that these holes represent grass or a similar material that was present in the clay and burned away during firing leaving the holes (T. L. Steinacher, personal communication 1988). The holes could also have been made prior to firing with a small, pointed tool, but they exhibit no discernible pattern and may not have been intentionally made. The function of the small ball is unknown. It may be a gaming piece or perhaps a toy. The larger amorphous object has a highly smoothed and polished area of use-wear on one face. It is thought to have been used as a burnishing tool in the manufacture of ceramic vessels.

Stone Tools

A total of 36 stone tools was collected from the test excavations at Buzzing Yucca. Descriptive categories represented in the sample include patterned triangular bifaces (n=2), patterned notched bifaces (n=2), patterned biface fragments (n=3), unpatterned bifaces and nonbipolar cores and core-tools (n=3), end scrapers (n=1), and other retouched and modified flakes (n=25). All of the specimens in the sample are chipped stone tools. No pecked/ground stone tool forms are present in the assemblage. The 36 individual stone tools consist of 31 single function implements and five double function implements, for a total of 41 functional tool occurrences. All of the stone tools are attributed to the Extended Coalescent component.

Tool Technology

Technological classification of the Buzzing Yucca stone tools is summarized according to test unit and archeological context in Table 57. Only five of the ten potential technological classes are represented in the sample. The majority of the tools are unpatterned flake tools (73.2%). Most are from intramural contexts, especially Tests 1-2 (House 5). Test 3, located just beyond the House 5 depression, also yielded a number of stone tools, as did

Table 57. Stone Tool Technological Class Data by Test Unit and Context, Buzzing Yucca Site (39LM166).

Technological Class		Extramural Test Units 3	4	5	7	8	Intramural* 1-2	6	Total
1 Small Thin Patterned Bifaces	n	-	-	-	-	-	2	2	4
	%	-	-	-	-	-	11.8	33.3	9.8
2 Large Thin Patterned Bifaces	n	-	-	-	-	-	3	-	3
	%	-	-	-	-	-	17.6	-	7.3
3 Irregular Unpatterned Bifaces	n	1	-	-	-	-	2	-	3
	%	8.3	-	-	-	-	11.8	-	7.3
4 Patterned Flake Tools	n	-	-	-	-	-	1	-	1
	%	-	-	-	-	-	5.9	-	2.4
5 Unpatterned Flake Tools	n	11	1	-	5	-	9	4	30
	%	91.7	100.0	-	100.0	-	52.9	66.7	73.2
6 Thick Bifacial Core-Tools	n	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-
7 Nonbipolar Cores-Tools	n	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-
8 Bipolar Core-Tools	n	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-
9 Unpatterned Pecked/Ground Stone Tools	n	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-
10 Patterned Pecked/Ground Stone Tools	n	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-
Total	n	12	1	-	5	-	17	6	41
	%	100.0	100.0	-	100.0	-	100.0	100.0	100.0

*Tests 1-2 are House 5; Test 6 is House 6.

extramural Test 7. The limited technological variability seen in the Buzzing Yucca stone tool sample is likely a product of small sample size and the limited extent of the test excavations. One would expect to see a much broader range of technological classes in an assemblage from a village site. However, the possibility that the site served some specialized function or functions that only required a narrow range of chipped stone tool forms cannot be entirely ruled out.

Technology and Lithic Raw Materials

Lithic raw material type frequency data for the technological classes identified in the Buzzing Yucca assemblage are contained in Table 58. Ten different raw material types are represented. Most of the tools are made of locally available raw materials (73.2%). Of all the local raw material types identified in the sample, solid quartzite was used the most frequently, with its use limited almost exclusively to the manufacture of unpatterned flake tool forms. Various types of nonlocal materials from the northern, western, and southern resource groups comprise the balance of the sample (26.8%). Bijou Hills silicified sediment is the most common nonlocal raw material (17.1%). A weak trend can be seen in the data for the preferential use of nonlocal raw materials in the manufacture of patterned stone tools.

Generally speaking, the lithic resource utilization pattern at Buzzing Yucca is consistent with other Extended Coalescent assemblages in the Lake Sharpe area (cf. Johnson 1984a; Toom 1984a). The only notable exception is the absence of Flattop chalcedony, a nonlocal lithic type of the western resource group. Various quantities of Flattop chalcedony are usually present in Extended Coalescent stone tool samples. The lack of Flattop chalcedony in the Buzzing Yucca collection is probably a function of sample bias because this lithic raw material type is identified in the flaking debris sample.

Function and Use-Phase

Date on the functional classification of the stone tools from Buzzing Yucca according the use-phase class are presented in Table 59. The tool sample shows a narrow range of functions for a village assemblage, which is also a reflection of the limited number of technological types. As before, this is either a product of sample bias or an indication of a specialized function for the site. The former alternative seems the most probable, but only more extensive excavations at the site can conclusively resolve this issue. The majority of the tools are finished specimens that were broken or exhausted during use (use-phase 4). A brief discussion on the general functional groups and specific functional classes contained in the assemblage follows. The Antelope Dreamer site report contains more complete information on stone tool functional groups and classes. Selected specimens are illustrated by functional class in Figure 80.

Patterned tool forms include four projectile points (arrow points), three fragments from bifacial cutting tools, and one broken scraping tool. Two of the arrow points are unfinished specimens that were broken during manufacture (use-phase 2). The other two are completely manufactured implements that were broken during use (use-phase 4). The two unfinished arrow points are

Table 58. Stone Tool Raw Material Type Data by Technological Class, Buzzing Yucca Site (39LM166).

Resource Group/ Raw Material	Technological Class 1	2	3	4	5	Total n	%
<u>Local Resource Group</u>							
04 Solid Quartzite	1	-	-	-	13	14	34.2
05 Porous Quartzite	-	-	-	-	3	3	7.3
06 Jasper/Chert	-	-	1	1	3	5	12.2
08 Clear/Gray Chalcedony	2	-	-	-	2	4	9.8
10 Dark Brown Chalcedony	-	-	1	-	-	1	2.4
35 Other Quartzite	-	-	-	-	2	2	4.9
37 Silt Stone/Limestone	-	-	1	-	-	1	2.4
Subtotal, Local Resources	3	-	3	1	23	30	73.2
<u>Northern Resource Group</u>							
28 Knife River Flint	1	-	-	-	1	2	4.9
<u>Western Resource Group</u>							
11 Plate Chalcedony	-	2	-	-	-	2	4.9
<u>Southern Resource Group</u>							
15 Bijou Hills Silicified Sediment	-	1	-	-	6	7	17.1
Subtotal, Nonlocal	1	3	-	-	7	11	26.8
Total n	4	3	3	1	30	41	100.0
%	9.8	7.3	7.3	2.4	73.2	100.0	

Table 59. Stone Tool Functional Class Data by Use-Phase Class, Buzzing Yucca Site (39LM166).

General Functional Group/ Specific Functional Class		Use-Phase Class 1	2	3	4	Total
1. Projectile Points						
01 Projectile point		-	2	-	2	4
2. Patterned Bifacial Cutting Tools						
07 Bilateral, heavy duty 1 bifacial cutting tool		-	-	-	1	1
15 Generalized patterned bifacial cutting tool		-	-	-	2	2
Subtotal		-	-	-	(3)	(3)
3. Patterned or Heavy Duty Scraping Tools						
20 Generalized transverse scraping tool		-	-	-	1	1
4. Jagged Expedient Cutting Tools						
08 Expedient general purpose cutting tool		-	-	2	-	2
5. Prepared or Regularly Modified Unpatterned Flake Tools						
23 Retouched or utilized flake used on variable material		-	-	-	3	3
6. Unprepared or Irregularly Modified Unpatterned Flake Tools						
22 Utilized flake used to saw or slice hard material		-	-	4	23	27
8. Pointed Tools						
19 Slotting/grooving tool (beak)		-	-	1	-	1
Total	n	-	2	7	32	41
	%	-	4.9	17.1	78.0	100.0

unnotched triangular forms (Figure 80A-B). The two finished arrow points are general Plains Side-Notched types (Figure 80C-D) (cf. Kehoe 1966, 1973). Both notched and unnotched arrow points are found in Extended Coalescent samples as completely manufactured and fully functional tools (cf. Ahler 1975). Lehmer (1971:119) notes that unnotched points are generally more common than notched forms in Extended Coalescent assemblages.

The following measurements were recorded for the three more or less complete arrow points from Buzzing Yucca. Some measurements are estimated because of broken and missing parts.

Comp. No.: 010001 (unnotched, triangular; use-phase 2; Figure 80B)
Weight: 1.7 g
Maximum Length: 30.5 mm (estimate)
Maximum Thickness: 4.7 mm
Maximum Blade Width: 15.0 mm (at base)
Maximum Base Width: 15.0 mm
Distance to Center of Notches from Base: unnotched

Comp. No.: 030001 (Plains Side-Notched; use-phase 4; Figure 80D)
Weight: 0.7 g
Maximum Length: 21.2 mm
Maximum Thickness: 3.2 mm
Maximum Blade Width: 13.0 mm
Maximum Base Width: 14.3 mm (estimate)
Distance to Center of Notches from Base: 5.4 mm

Comp. No.: 030002 (Plains Side-Notched; use-phase 4; Figure 80C)
Weight: 1.5 g
Maximum Length: 30.5 mm (estimate)
Maximum Thickness: 3.7 mm
Maximum Blade Width: 14.8 mm
Maximum Base Width: 15.5 mm
Distance to Center of Notches from Base: 5.6 mm

The majority of tools in the Buzzing Yucca sample are unprepared or irregularly modified unpatterned flake tools (class 22). Such tools are inferred to have been used for relatively short duration sawing or cutting tasks involving relatively hard materials such as wood and bone (Ahler and Swenson 1985:333). Other unpatterned tool forms include two expedient general purpose cutting tools (class 08), three retouched or utilized flakes used on variable material (class 23), and one slotting/grooving tool or beak (class 19). The slotting/grooving tool was recorded on an irregular unpatterned biface tool form made of siltstone or limestone. It may have also served as an expedient general purpose cutting tool (class 08), but evidence of this function is uncertain.

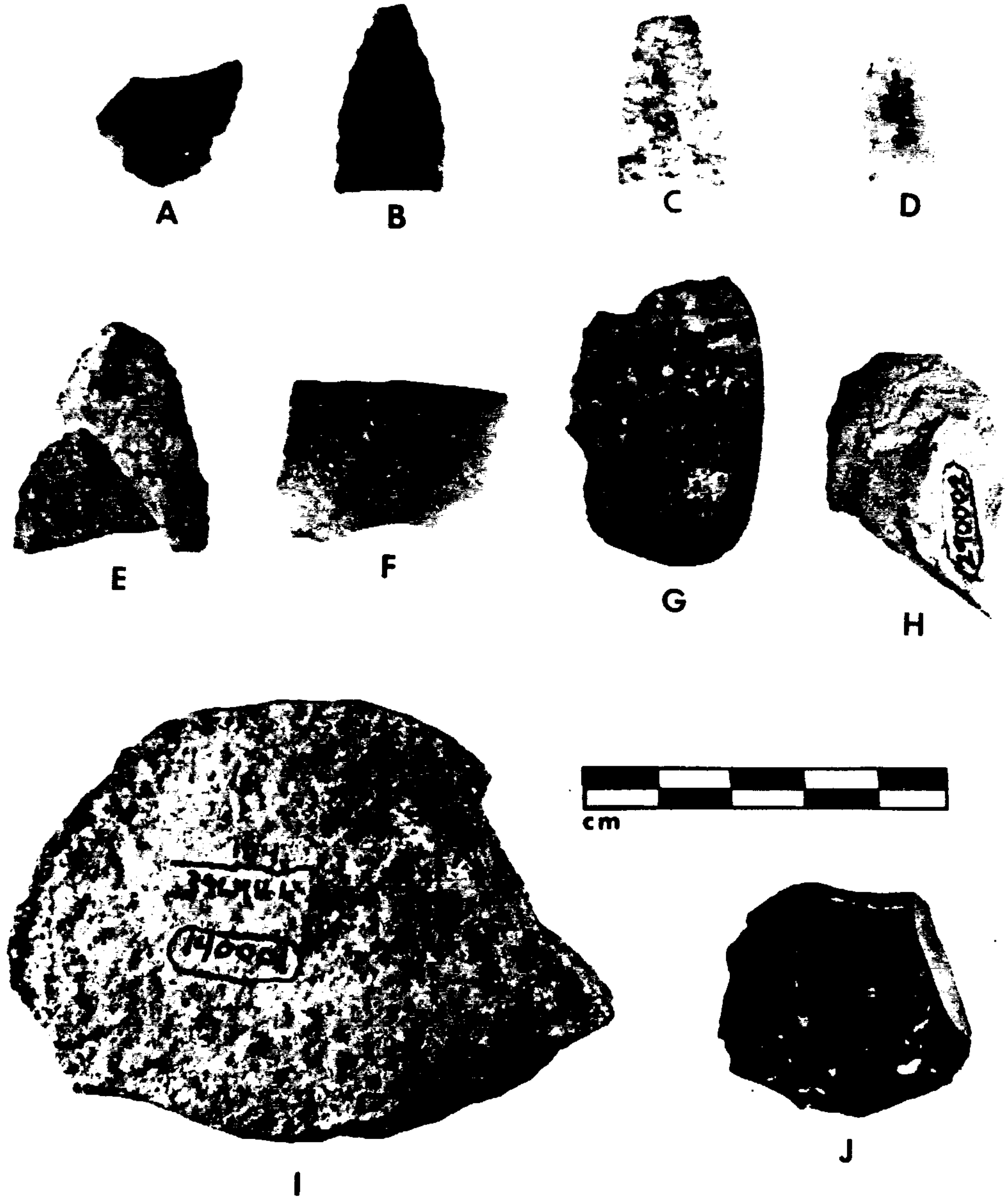


Figure 80. Photos of Chipped Stone Tools, Buzzing Yucca Site (39LM166). A-D: Projectile (arrow) points (class 01). E: Bilateral heavy duty 1 bifacial cutting tool (class 07). F-H: Utilized flakes used to saw or slice hard material (class 22). I-J: Expedient general purpose cutting tools (class 08).

Chipped Stone Flaking Debris

A total of 265 pieces of G2-3 chipped stone flaking debris was found in the test excavations at Buzzing Yucca. All of the flaking debris is attributed to the Extended Coalescent component. Most of the flaking debris comes from intramural contexts, although Test 3 located near the House 5 depression also yielded a relatively large number of flakes (Table 60). An additional 23 G4 flakes were present in the three water screen samples taken from the rooffall/floor zone and hearth (F100) of House 5. Water screen samples were not systematically collected from the excavation units in House 5, so the G4 flaking debris is of little analytic value and is not considered further.

It is difficult to precisely interpret the flaking debris size grade data in terms of chipped stone tool technological operations performed at the site in the absence of systematic samples of G4 flaking debris. Nevertheless, the high percentage of G3 flakes in the sample suggests that tool manufacture and maintenance operations were routinely performed at the site (Table 60). The low percentage of G2 flakes and the complete absence of G1 flaking debris would seem to indicate that core reduction was not a major activity. The lack of cores and potential cores in the stone tool sample further supports this interpretation.

Flaking debris raw material type data for size grades 1-3 are presented in Table 61. The range of raw materials in the flaking debris sample is somewhat larger than that exhibited by the stone tool sample. This includes the addition of a few more local lithic types and such nonlocal lithic types as smooth gray Tongue River silicified sediment (northern resource group) and Flattop chalcedony (western resource group). The flaking debris sample is heavily dominated by local raw materials (79.5%), particularly various chalcedonies (43.0%). This trend parallels that exhibited by the stone tool raw materials. Such a pattern is largely a result of the preponderance of unpatterned tool forms in the stone tool sample and the recognized tendency of Middle Missouri villagers to manufacture these implements from locally available raw materials (cf. Ahler 1977a; Johnson 1984a).

Fire-Cracked Rock

A total of 2492 g of G1-3 fire-cracked rock (FCR) was obtained from the test excavations at Buzzing Yucca (Table 62). The vast majority of the FCR from the site was recovered from Tests 1-2 in House 5 (2401 g, 96.4%), and virtually all of this was found in F100 (2399 g, 96.3%), the central hearth of the house. Unlike the other sites reported here, the FCR from Buzzing Yucca consists primarily of small (G2-3) fragments of Pierre Shale. The use of Pierre Shale for heated stones is unusual and suggests a specialized function for this material. Its principal association with F100 may indicate some connection to ceramic manufacture. Just what this connection might be is difficult to say. Perhaps small slabs of Pierre Shale were used as pot rests during the firing of ceramic vessels.

Table 60. Chipped Stone Flaking Debris Size Grade Data by Test Unit and Context, Buzzing Yucca Site (39LM166).

Context/ Test Unit		Size Grade: Grade 1	Grade 2	Grade 3	Total
Extramural Tests					
3	n	-	7	51	58
	%	-	12.1	87.9	100.0
4	n	-	-	7	7
	%	-	-	100.0	100.0
5	n	-	-	-	-
	%	-	-	-	-
7	n	-	-	11	11
	%	-	-	100.0	100.0
8	n	-	-	1	1
	%	-	-	100.0	100.0
Subtotal	n	-	7	70	77
	%	-	9.1	90.9	100.0
House 5 Tests					
1	n	-	12	77	89
	%	-	13.5	86.5	100.0
2	n	-	15	59	74
	%	-	20.3	79.7	100.0
Subtotal	n	-	27	136	163
	%	-	16.6	83.4	100.0
House 6 Test					
6	n	-	3	22	25
	%	-	12.0	88.0	100.0
Total	n	-	37	228	265
	%	-	14.0	86.0	100.0

Table 61. Chipped Stone Flaking Debris Raw Material Type Data by Size Grade, Selected Samples, Buzzing Yucca Site (39LM166).*

Resource Group and Raw Material Type	Size Grade			Total	
	Grade 1	Grade 2	Grade 3	n	%
Local Resource Group					
02 Coarse Yellow TRSS	-	1	1	2	1.0
03 Coarse Red TRSS	-	-	2	2	1.0
04 Solid Quartzite	-	11	36	47	23.5
05 Porous Quartzite	-	-	5	5	2.5
06 Jasper/Chert	-	-	6	6	3.0
08/09/10 Various Chalcedonies	-	9	77	86	43.0
13 Basaltic	-	-	1	1	0.5
35 Other Quartzite	-	3	6	9	4.5
37 Siltstone/Limestone	-	1	-	1	0.5
Subtotal, Local Resources	-	25	134	159	79.5
Northern Resource Group					
01 Smooth Gray TRSS	-	3	2	5	2.5
28 Knife River Flint	-	-	1	1	0.5
Western Resource Group					
07 Flattop Chalcedony	-	-	11	11	5.5
11 Plate Chalcedony	-	1	4	5	2.5

Table 61. Chipped Stone Flaking Debris Raw Material Type Data by Size Grade, Selected Samples, Buzzing Yucca Site (39LM166) (Continued).*

Resource Group and Raw Material Type		Size Grade			Total	
		Grade 1	Grade 2	Grade 3	n	%
Southern Resource Group						
15 Bijou Hills Silicified Sediment		-	4	11	15	7.5
Subtotal, Nonlocal Resources		-	8	29	37	18.5
Misc. Resource Group						
12 Burnt Chalcedony		-	-	4	4	2.0
Total	n	-	33	167	200	100.0
	%	-	16.5	83.5	100.0	

*Flaking debris samples selected for raw material type analysis include catalog nos. 104, 105, 106, 204, 205, 206, 207, 301, 302, and 303.

Table 62. Fire-Cracked Rock Size Grade Data by Test Unit and Context, Buzzing Yucca Site (39LM166).

Context/ Test Unit		Size Grade (grams) Grade 1	Grade 2	Grade 3	Total
Extramural Tests					
3	wt	66	-	-	66
	%	100.0	-	-	100.0
4	wt	-	12	-	12
	%	-	100.0	-	100.0
5	wt	-	-	-	-
	%	-	-	-	-
7	wt	-	-	1	1
	%	-	-	100.0	100.0
8	wt	-	-	1	1
	%	-	-	100.0	100.0
Subtotal	wt	66	12	2	80
	%	82.5	15.0	2.5	100.0
House 5 Tests					
1	wt	24	502	1088	1614
	%	1.5	31.1	67.4	100.0
2	wt	44	126	617	787
	%	5.6	16.0	78.4	100.0
Subtotal	wt	68	628	1705	2401
	%	2.8	26.2	71.0	100.0
House 6 Test					
6	wt	-	10	1	11
	%	-	90.9	9.1	100.0
Total	wt	134	650	1708	2492
	%	5.4	26.1	68.5	100.0

Other Artifacts

Other artifacts collected from the test excavations at Buzzing Yucca include quantities of burned earth, ash, charcoal, shell, and recent Euroamerican material. Distributional data on these materials are presented in Table 63. As might be expected, virtually all of the burned earth and ash are associated with the central hearths of Houses 5 and 6. The relatively small amount of burned earth consists entirely of small G2-3 sized pieces. Particularly large quantities of consolidated G1-3 ash were recovered from F100 in House 5. Very small quantities of scattered charcoal were found in both extramural and intramural contexts. Shell, consisting of small (G3) unmodified and unidentifiable fragments, was also recovered from both intramural and extramural contexts. All of the shell fragments appear to be from locally available freshwater mussels.

The recent Euroamerican artifacts in the site collection were all found in the upper 20 cm of Test 6, with all but three specimens found in the upper 10 cm. The historic component at Buzzing Yucca is principally located in the vicinity of Test 6, including the two recorded structural features (F8-9), and the recent artifacts undoubtedly relate to this component. The Euroamerican artifacts include glass, ceramic, metal, and shell specimens. The glass artifacts consist of G2-3 pieces of bottle and window glass. All of the historic ceramics are G3 sized sherds from a white table ware, some of which exhibit a floral decal decoration. Metal artifacts include eight wire-cut (round) nails of various sizes, one horse shoe nail, two pieces of wire, two rivet heads, and a few amorphous metal scraps. The historic shell artifacts consist entirely of six buttons of various sizes. Another button made of some other unidentified material (opaque glass?) is also present. Rounding out the historic artifact inventory are one piece of what appears to be cellophane and another of foam rubber.

The Euroamerican artifacts are all consistent with a relatively recent, turn-of-the-century occupation. The designation of the historic artifacts as Euroamerican indicates their origin of manufacture, not necessarily the ethnic or racial identity of historic occupants of the site. These persons could have been of either Euroamerican or Amerindian extraction. An Amerindian affiliation seems the most likely because the site is within the confines of the Lower Brule Reservation and most of the homestead sites on the reservation were initially occupied by Indians (cf. Smith 1984; Toom and Picha 1984).

Vertebrate Fauna

Vertebrate fauna remains recovered from test excavations at Buzzing Yucca total 1400 g of G1-3 unmodified bone debris. Only 303 g of the bone debris (21.6%) shows evidence of burning (Table 64). Virtually all of the bone is attributed to the Extended Coalescent component. The sample is highly fragmented for the most part, although some more or less complete elements are represented. Several G1-3 specimens are potentially identifiable, as are some G4-5 specimens collected from the few water screen samples taken in House 5. Modified specimens (bone tools) total some 14 separate G1-5 pieces, many of which are fragments from a far lesser number of individual tools.

Table 63. Data on Other Artifacts by Test Unit and Context, Buzzing Yucca Site (39LM166).

Context/ Test Unit		Burned Earth(g)	Ash(g)	Charcoal (g)		Shell	Euroamerican (Recent)			
							Glass	Ceramics	Metal	Other
<u>Extramural Tests</u>										
3	wt	-	-	3	n	1	-	-	-	-
4	wt	-	-	-	n	-	-	-	-	-
5	wt	-	-	-	n	2	-	-	-	-
7	wt	6	-	-	n	-	-	-	-	-
8	wt	-	-	1	n	-	-	-	-	-
Sub-total	wt	6	-	4	n	3	-	-	-	-
<u>House 5 Tests</u>										
1	wt	194	1545	2	n	8	-	-	-	-
2	wt	261	1190	3	n	2	-	-	-	-
Sub-total	wt	455	2735	5	n	10	-	-	-	-
<u>House 6 Test</u>										
6	wt	210	4	5	n	4	8*	10*	18*	9*
Total	wt	671	2739	14	n	17	8	10	18	9

*Recovered from the upper 20 cm (Levels 1 and 2) of Test 6.

Table 64. Unmodified Bone Size Grade Data by Test Unit and Context, Buzzing Yucca Site (39LM166).

Context/ Test Unit		All Bone (grams)				Burned Bone (grams)			
		G1	G2	G3	Total	G1	G2	G3	Total
Extramural Tests									
3	wt	187	89	87	363	-	2	4	6
	*%	51.5	24.5	24.0	100.0	-	2.3	4.6	1.7
4	wt	499	94	65	658	-	-	2	2
	%	75.8	14.3	9.9	100.0	-	-	3.1	0.3
5	wt	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-
7	wt	-	-	2	2	-	-	2	2
	%	-	-	100.0	100.0	-	-	100.0	100.0
8	wt	-	2	7	9	-	-	1	1
	%	-	22.2	77.8	100.0	-	-	100.0	100.0
Subtotal	wt	686	185	161	1032	-	2	9	11
	%	66.5	17.9	15.6	100.0	-	1.1	5.6	1.1
House 5 Tests									
1	wt	-	58	102	160	-	35	96	131
	%	-	36.2	63.8	100.0	-	60.0	94.1	81.9
2	wt	-	39	93	132	-	31	83	114
	%	-	29.6	70.4	100.0	-	79.5	89.2	86.4
Subtotal	wt	-	97	195	292	-	66	179	245
	%	-	33.2	66.8	100.0	-	68.0	91.8	83.9
House 6 Test									
6	wt	-	22	54	76	-	7	40	47
	%	-	29.0	71.0	100.0	-	31.8	74.1	61.8
Total	wt	686	304	410	1400	-	75	228	303
	%	49.0	21.7	29.3	100.0	-	24.7	55.6	21.6

*Burned bone percentages are stated as a product of the quantities of "all bone."

Unlike most other artifact classes, the majority of the bone from Buzzing Yucca is from extramural contexts, particularly Tests 3 and 4 (Table 64). Modest amounts of bone were also recovered from the tests into Houses 5 and 6, a good deal of which was found in the central hearths of the houses. Most of the burned bone comes from these intramural contexts. The bone sample is about equally split between large (G1) and small (G2-3) pieces. All of the G1 specimens are from Tests 3 and 4, and they comprise a high percentage of the bone in these two test units.

The identified and modified bone from the site are considered in detail in Appendix B (Wheeler, this report). Only the general characteristics of the vertebrate fauna sample are discussed here. The bone aggregate from Buzzing Yucca represents a relatively diverse faunal assemblage. As expected, the majority of the bone in the sample comes from large mammals, particularly bison; a single deer element is also present. Identified medium and small mammals include large canid (coyote?), badger, rabbit, prairie dog, vole, and pocket gopher. The few modified specimens (bone tools) in the collection consist of at least one and possibly two fragmented bison scapula digging tools (hoes), and a long bone fragment with a rounded and smoothed end.

Macrobotanical Remains

The few identifiable macrobotanical specimens from the Buzzing Yucca site are considered in detail in Appendix A (Van Ness, this report). The flotation samples taken from the two intramural hearths (F100 and F101) yielded very few identifiable remains. Most of the identifiable specimens, of which there are not many, were picked from the water screen samples taken in the rooffall/ floor zone of House 5. Another two are from an extramural context in Test 3. Corn is the only definite cultigen represented in the site samples. Uncharred sunflower seeds are also present, but these are thought to be noncultural. Edible wild plant species include goosefoot, plum, and cherry. A small wood charcoal sample taken from the inner rooffall of House 5 is identified as ash. It is unclear whether this sample represents the remains of a structural support or fuel displaced from the hearth.

While the macrobotanical sample from Buzzing Yucca is meager, it does indicate the use of wild and domesticated plant species by the Extended Coalescent occupants of the site. The limited quantity and diversity of the macrobotanical remains from the site is likely a reflection of sample bias resulting from poor preservation conditions and the limited extent of the excavations. If the houses at Buzzing Yucca had been destroyed by burning, like those at the Antelope Dreamer site, it is possible that the macrobotanical sample would have exhibited greater numbers of more diverse plant resources.

Artifact Distributions and Densities

Data on the distribution and density of major prehistoric artifact classes at Buzzing Yucca are contained in Table 65. Quantities of artifacts are stated according to number (n) or weight (wt) per m^2 of excavated area for each test unit and archeological context, as well as for the site as a whole.

Table 65. Major Prehistoric Artifact Class Distribution and Density Data by Test Unit and Context, Buzzing Yucca Site (39LM166).

Context/ Test Unit	Rim Sherds	Body Sherds	Stone Tools	Flaking Debris*	FCR (g)	Unmodified Bone (g)
Extramural Tests						
3	3	172	12	58	66	363
4	-	13	1	7	12	658
5	-	3	-	-	-	-
7	3	110	5	11	1	2
8	1	5	-	1	1	9
Subtotal	7	303	18	77	80	1032
n/wt/m^2	1.4	60.6	3.6	15.4	16.0	206.4
House 5 Tests						
1	14	422	7	89	1614	160
2	12	599	10	74	787	132
Subtotal	26	1021	17	163	2401	292
n/wt/m^2	13	510.5	8.5	81.5	1200.5	146.0
House 6 Test						
6	1	182	6	25	11	76
Subtotal	1	182	6	25	11	76
n/wt/m^2	1.0	182.0	6.0	25.0	11.0	76.0
Total	34	1506	41	265	2492	1400
n/wt/m^2	4.3	188.3	5.1	33.1	311.5	175.0

*Includes size grade 1-3 flaking debris only.

An examination of the data indicates that artifact densities for most classes of material are highest in the houses, with the exception of unmodified bone. Test 3, located near the House 5 depression, yielded the highest overall density of artifacts of all the extramural tests. It appears on the basis of the limited testing conducted at the site that most prehistoric artifactual remains are to be found in and around the house depressions. In general, the artifact densities calculated for the site are rather low for an earthlodge village. This fact, accompanied by a lack of evidence for extramural midden accumulation, indicates that the Extended Coalescent village occupation was of relatively short duration and/or intensity.

Discussion and Conclusions

The Buzzing Yucca site is interpreted as a permanent residential base for a small group of Plains Village people affiliated with the Extended Coalescent variant. Another Extended Coalescent village (39LM206) was recorded by the SIRBS just to the northwest of Buzzing Yucca near the former mouth of Cedar Creek (Lehmer 1971; Steinacher and Toom 1984a; Toom and Picha 1984; SIRBS records). The village occupation at site 39LM206, which is now completely inundated by Lake Sharpe, may have been related in some way to that at Buzzing Yucca. The Buzzing Yucca village component does not seem to have been occupied for any considerable length of time judging by the overall low artifact densities and the apparent absence of any extramural midden accumulation. Furthermore, the limited number of technological and functional forms in the stone tool sample, combined with the relative abundance of ceramics, suggests that the site may have served some specialized purpose, perhaps related to ceramic manufacture. At a minimum, the artifactual data do suggest that only a limited range of activities were carried out at this location. One can speculate that the Buzzing Yucca site may have been occupied by a small group of individuals from the nearby 39LM206 village in order to conduct a few specific tasks, possibly of a restrictive or secretive nature. As interesting as these speculations are, additional research is required to confirm their validity. The site could just as easily represent a small but "typical" Extended Coalescent residential base, which only seems to have had a specialized function due to sample biases resulting from the limited extent of the excavations reported here.

The few subsistence data that are available from the site reflect a mixed economy based on hunting, gathering, and horticulture. Both plant and animal resources were used for food and as sources of raw material for the manufacture of tools, facilities, and other items. Exploited animal resources include various species of both large and small mammals; bison appears to have been the preferred quarry. Shell fish (mussels) are present as a very minor subsistence and/or technological resource. The plant resources used at the site consist of both wild and domesticated species. The only positively identified cultigen is corn.

The ceramic assemblage from the site consists of various Talking Crow, Iona, and La Roche types. These types are characteristic of Extended Coalescent variant components in the project area, and there is presently no firm foundation from which to infer outside relationships for groups of the variant based on ceramic similarities. The few classifiable arrow points in the collection are patterned after the general Plains-Side Notched point type.

This point form can be found in most any Plains Village period assemblage in the study region.

Lithic raw materials used in the manufacture of chipped stone tools show a primary reliance on locally available materials. Lesser numbers of various nonlocal lithic types are also present in the chipped stone samples, consisting of raw materials from the northern, western, and southern resource groups, including smooth gray Tongue River silicified sediment, Knife River flint, Flattop chalcedony, plate chalcedony, and Bijou Hills silicified sediment. Bijou Hills silicified sediment and Flattop chalcedony are the most common nonlocal lithic types, which is typical of most other Extended Coalescent assemblages (e.g., Ahler 1977a; Johnson 1984a; Toom 1984a). No clearly exotic nonlocal materials such as obsidian are represented which would indicate long-distance trade relationships extending well beyond the study region. All of the nonlocal lithic types are common elements of late prehistoric collections in the Big Bend region. Such materials could have been acquired either through a regional (subarea-wide) trade network, operating within and around the Middle Missouri subarea, or through direct acquisition by special task groups working beyond the Lake Sharpe area proper.

The excavations into structural features yielded insufficient data to suggest a definite method of construction for the late prehistoric dwellings at the site. However, it is believed that the houses at Buzzing Yucca are based on the usual architectural style of the Extended Coalescent variant -- circular earthlodges with a dome-shaped superstructure. It was found that the roofs of the houses at Buzzing Yucca were covered by a blanket of earth, possibly in excess of 20 cm thick. Large subfloor, basin-shaped hearths were also found at the center of both tested house depressions. The orientation of the houses (i.e., the entryways) is not known.

X. GHOST LODGE SITE (39ST120)

Site Description and Background

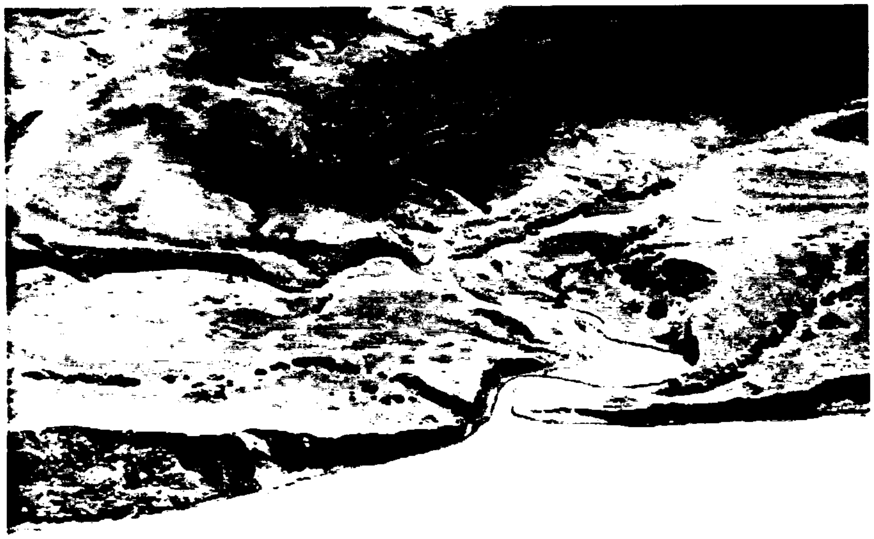
The Ghost Lodge site is a small, compact, unfortified earthlodge village with a broad scattering of associated artifactual remains situated in the midst of low-lying Missouri Breaks terrain adjacent to Lake Sharpe (Figure 81). The site is located in actively eroding benches on both sides of an unnamed intermittent stream near its former confluence with the Missouri River (Figure 82). Six rather indistinct, circular depressions (Features 2-7), believed to be earthlodge remains, are present on the more extensive, flatter bench on the east side of the stream channel. A single undercut (bell-shaped) cache pit (Feature 1) was found exposed in profile in the western cutbank of the stream. A buried soil horizon with occasional bone fragments is also present in the western stream cutbank, potentially representing another component of unknown prehistoric cultural affiliation (Toom and Picha 1984). The surface of the site supports moderate to heavy growths of mixed grass prairie. The site is being severely impacted by active tunnel gullying (undercutting), especially on the eastern side of the stream channel where the village features are located (Figure 83A). The flow of the intermittent stream is also eroding the site to some extent along its banks (Figure 83B).

Previous Archeological Research

The Ghost Lodge site was first discovered and recorded in 1983 by an archeological survey team from the University of North Dakota (UND) under the direction of T. L. Steinacher (Toom and Picha 1984). This work was performed by UND as part of a contractual agreement with the U.S. Army Corps of Engineers (USACE), Omaha District, to conduct an archeological survey of certain federal lands along the west bank of Lake Sharpe (D. L. Toom, principal investigator; S. A. Ahler, co-principal investigator). Fieldwork at the site by UND focused on the generation of documentary information, particularly map data. Selected surface artifacts (primarily ceramics) were also collected, and some of the presumed house depressions were hand cored.

The site is named for the six rather indistinct surface depressions documented by UND. These depressions are shallow, roughly circular in shape, and rather small for the usual earthlodge remains, ranging from about 5-7 m in diameter (e.g., Figure 84A). Hand coring of selected depressions, especially Feature 2, revealed ash, charcoal, and burned earth from about 70-80 cm below the present ground surface (surface depth or sd). This suggests the depressions represent the remains of earthlodges, presumably with circular floor plans. The general configuration of the house floors was not confirmed by probing. Other surface anomalies suggest the presence of additional house depressions or other related features on the east side of the stream. Approximately one-half of one house depression (Feature 6) has been destroyed by the subsurface erosion processes that are undercutting the surface of the eastern bench (Figure 84B).

UND researchers also reported a single undercut or bell-shaped cache pit (Feature 1) found exposed in profile in the western cutbank of the stream; it had a maximum diameter of about 75 cm and was about 100 cm deep. The mouth of



A

B

Figure 81. General Photos of the Ghost Lodge Site (39ST120). A: Aerial photo of the site locality, south view (photo no. 2618, UND 1983). B: Overview of the eastern part of the site (village area), west-northwest view (photo no. 2579, UND 1983).

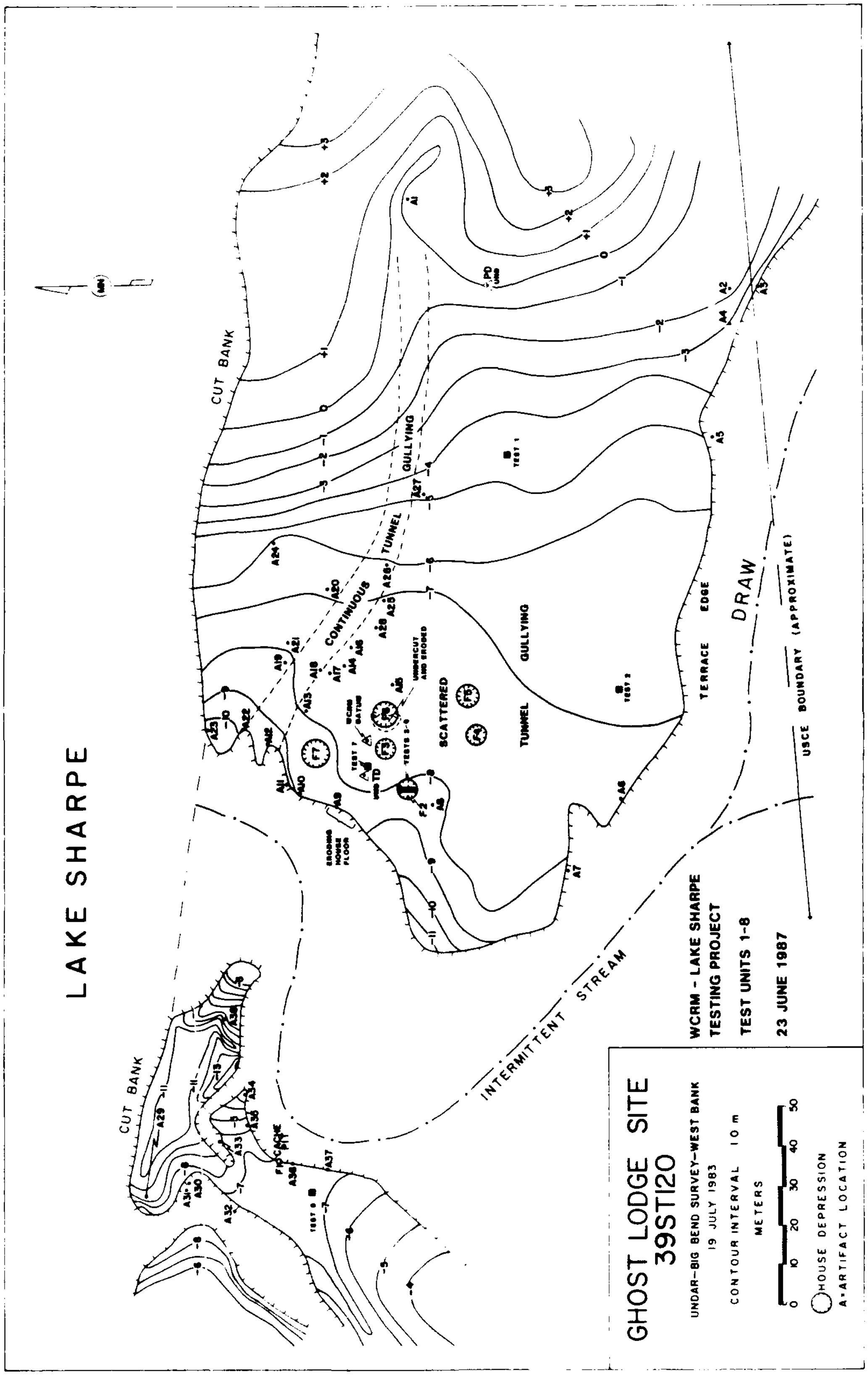


Figure 82. Contour Map of the Ghost Lodge Site (39ST120).

A

B

Figure 83. Photos of Erosion at the Ghost Lodge Site (39ST120). A: Tunnel gullying in the eastern bench (village area), southeast view (photo no. 2585, UND 1983). B: Possible truncated house floor and artifacts exposed in the stream cutbank of the eastern bench (village area), east-southeast view (photo no. 211, Toom 1987).

A

B

Figure 84. Photos of House Depressions at the Ghost Lodge Site (39ST120). A: Surface depression of Feature 2 (House 2), west view (photo no. 2574, UND 1983). B: Surface depression of Feature 6 (House 6) partially destroyed by subsurface erosion, east view (photo no. 2577, UND 1983).

the pit begins near the surface, with its base dug into the buried soil horizon. Only one piece of bone was observed in the pit fill near the base of the pit. UND investigators speculated that most of the pit had eroded away. A buried soil horizon with occasional bone fragments is also reported in the western cutbank of the stream channel at about 100 cm sd. Another component of unknown prehistoric cultural affiliation is potentially present in association with this horizon. The UND survey team could not work directly in the western cutbank exposure because it is quite high, undercut, and generally unstable.

Sparse surface artifacts were found scattered over much of the site area by the UND crew. Artifactual remains were also observed on and in erosional faces. Unmodified bone was the most common material class represented among the surface debris, primarily consisting of fragments of what appeared to be bison elements. A few lithic and ceramic artifacts were also seen, including a flake, a hammerstone, a rim sherd, and three body sherds. Only the rim sherd and one body sherd were collected. The three body sherds are smoothed, although some vestiges of brushing are reported on the exterior of the collected specimen, which also exhibits a brushed interior. The outcurving rim sherd has a rounded, pinched lip (Stanley Pinched or Wavy Rim type?). Otherwise, it is plain and smoothed with vestiges of brushing observed on the exterior and interior surfaces. UND investigators speculate that the Plains Village component at Ghost Lodge is Post-Contact Coalescent on the basis of this meager ceramic data. The presence of circular house floors, if real, would also support a Coalescent tradition occupation.

UND researchers further note that it is unusual to find village sites in the Missouri Breaks zone. They go on to speculate that the site may represent a seasonally occupied hunting camp with small, conical-shaped earthlodges. The physiographic location of the site would provide ample opportunity to ambush animals, particularly bison, coming down to the Missouri to water from the uplands. Additionally, the relative abundance of unmodified faunal remains, if real, suggests that hunting was the primary activity carried out at the site. Such sites have been reported elsewhere in the Middle Missouri subarea. For example, the Fire Heart Creek site (32SI2) contains a Post-Contact Coalescent component with conical earthlodges that is interpreted as an Arikara hunting camp (Lehmer 1966).

The UND investigators conclude that these speculative interpretations must be confirmed by testing. If the Ghost Lodge site does prove to be a seasonal hunting camp of Post-Contact Coalescent variant (Arikara) affiliation, it would represent a virtually unique archeological resource containing information on an important and little investigated aspect of protohistoric Plains Village tradition settlement patterns in the Middle Missouri subarea. The site was recommended for testing and a full National Register evaluation.

Present Investigations

The goal of the present investigations at the Ghost Lodge site is to act on the UND recommendations by testing and evaluating the site as a potential National Register property. Determining the function, cultural affiliation, and research potential of the archeological component(s) represented at the site is of primary concern. Confirming the vertical and horizontal boundaries

of the site and evaluating the artifactual content of extramural (outside-house) and intramural (within-house) contexts are other important research considerations.

Fieldwork

Eight 1 X 1 m test units were excavated to varying depths at the Ghost Lodge site in both intramural and extramural contexts (Table 66). Four tests were individual 1 X 1 m units placed in extramural contexts. Three of these extramural tests (Tests 1, 2, and 7) were distributed about the eastern site area; the fourth (Test 8) was placed in the western part of the site (Figure 82). The other four test units (Tests 3-6) were combined into a 1 X 4 m excavation that was dug across the center of Feature 2 (House 2) where hand coring indicated the present of a hearth. Test 7 was located in the vicinity of the presumed house depressions so as to evaluate the artifactual content of extramural contexts near the houses. The other extramural tests were placed well away from the recorded depressions. The primary purpose of Test 8 was to evaluate the content of extramural contexts in the western part of the site, especially the buried soil horizon observed in the western cutbank. It was not possible to work directly in either the eastern or western stream cutbanks because of their height and instability. Surface collection of analytically significant artifacts was not attempted in view of the exhaustive surface inspection made at the site by the UND survey crew.

Test unit excavation proceeded according to 10 cm arbitrary levels for the most part. Terminal levels into houses and feature levels were adjusted to fit the contours of the floor and wall of House 2 as well as the portion of the central hearth (F101) uncovered in the House 2 tests. The sediment matrix from all extramural and most all intramural excavation units was dry screened over one-quarter inch mesh hardware cloth. Systematic water screen samples were not taken from all intramural test unit levels at Ghost Lodge as they were at Antelope Dreamer. As at Buzzing Yucca, the logistical constraints of water transportation precluded extensive water screen sampling. A few water screen samples were taken from selected excavation units in House 2 (Tests 3-6). These include two standard water screen samples (one-ninth fraction) from the rooffall/floor zone of the house and one larger sample consisting of about 50% of the fill of the central hearth (F101). All of the extramural tests were dug into clayey subsurface soil horizons. The intramural tests were terminated at the house floor level, which also consists of a clayey subsurface soil.

Inspection of the cutbanks of the intermittent stream at Ghost Lodge revealed little change in the four years since the discovery of the site by UND and the fieldwork reported here. Feature 1, the extramural cache pit exposed in the western cutbank, exhibits a less distinct profile and appears to be almost completely gone. A small area of bone and other artifacts eroding from what appears to be a shallow depression near the surface of the eastern cutbank is believed to be a truncated house floor (Figure 83B). This feature was not reported by UND, although bone was mapped in the cutbank at this location. This supposed feature could not be investigated further because of the height and instability of the cutbank. Tunnel gullying at the site continues unabated, especially in the eastern bench, and threatens to undermine much of the primary site area (cf. Figures 81-84).

Table 66. Test Unit Specifications and Combined Units, Ghost Lodge Site (39ST120).

Test Unit	Context	Combined Units and Aggregate Size	Excavated Depth*	Excavated Volume*
1	Extramural	None - 1 X 1 m	70 cm	0.7 m^3
2	Extramural	None - 1 X 1 m	80 cm	0.8 m^3
7	Extramural	None - 1 X 1 m	80 cm	0.8 m^3
8	Extramural	None - 1 X 1 m	110 cm	1.1 m^3
Subtotal, Extramural Tests				3.4 m^3
3	House 2	Tests 3-6 - 1 X 4 m	65 cm	0.65 m^3
4	House 2	Tests 3-6 - 1 X 4 m	65 cm	0.65 m^3
5	House 2	Tests 3-6 - 1 X 4 m	65 cm	0.65 m^3
6	House 2	Tests 3-6 - 1 X 4 m	60 cm	0.6 m^3
Subtotal, House 2 Tests				2.55 m^3
Total				5.95 m^3

*Does not include the subfloor hearth (F101) in House 2.

Geomorphic Context and Stratigraphy

The Ghost Lodge site is situated in the lower elevations of heavily dissected and eroded Missouri Breaks terrain adjacent to Lake Sharpe. The site occupies low-lying, narrow benches (strath or rock-cut terraces) cut into Pierre Shale bedrock on the east and west sides of an intermittent stream channel. The surface elevation trends of the benches indicate they are primarily a product of the action of the intermittent stream system, not the river. The eastern bench, which contains the primary site area, is the more extensive of the two. It is bordered on the south by another intermittent stream channel that is a major tributary of the primary drainageway (Figures 81A and 82). The smaller western bench, which is little more than a terrace remnant, shows extensive evidence of cutting and filling by old drainageways. The benches are at an elevation of about 1440-1460 ft amsl. They appear to be

graded to the approximate level of the MT-2 terrace which is located on the north side of the river opposite the site (cf. Coogan 1980). Following nomenclature developed by Coogan (1987), the benches would be designated as CMT-2 (Creek/Missouri Terrace-2) because they are stream terraces that have been graded to the level of the primary MT-2 river terrace. The MT-2 terrace is a depositional (cut-and-fill) terrace (Coogan 1987:54). The relationship between the MT-2 and the CMT-2 at the Ghost Lodge site is unclear.

As mentioned above, the surface of the eastern bench is being undermined by extensive tunnel gullying. The general stratigraphy of the bench consists of loess (silt loam) deposited on clayey colluvium and Pierre Shale bedrock. The tunnel gullying is thought to be result of subsurface water flow at the interface of the loess and bedrock units. It is highly likely that a substantial portion of the surficial deposits on the eastern bench will be destroyed if the tunnel gullying remains active. This would also result in the destruction of the bulk of the cultural deposits that are still preserved in the eastern bench.

Profile Descriptions, Sediments, and Soils

The surface of the site consists of loess (silt loam) deposited on clayey colluvium. The colluvium derives from the higher Breaks terrain surrounding the site to the east, south, and west; it is deposited on Pierre Shale bedrock. This general depositional sequence can be seen quite clearly in the bench cutbanks along the intermittent stream (Figure 85). The present surface soil at the site is designated as a Sully-Sansarc complex (Borchers 1980:Sheet 58). The Sully soil is a deep silt loam occupying narrow ridges and downslope areas; the Sansarc soil is a shallow clay located along drainageways. The Sully soil is of primary relevance here because it covers both the eastern and western benches and contains all of the identified cultural deposits. The Sansarc clay (or some related soil) is buried beneath the Sully silt loam in the benches. No archeological potential is attributed to the Sansarc clay at this location.

The more or less constant addition of loess parent material at the site has produced what is referred to as a cumulative soil profile in the Sully silt loam. Cumulative soils are those that receive influxes of parent material while pedogenesis is ongoing; in essence, soil formation and deposition occur simultaneous at the same location (Birkeland 1984:184-185). Overthickened or cumulative A horizons, those that are being gradually and continually buried during soil formation, are a common feature of cumulative soils. Cumulative A horizons are present in all of the extramural test unit profiles at Ghost Lodge.

The construction and subsequent collapse of earthlodges at as many as six locations in the eastern part of the site has interrupted the natural soil sequence. The excavation of shallow house pits has removed the natural surface horizons, and the collapse of the earthen structures has interposed anthrosols consisting of anthropic A horizons between the remaining natural soil units within the house remains. Juxtaposition of the anthropic soils with the natural soils horizons will occur at the outer margins of the houses. Anthrosols are discussed in greater detail in the Antelope Dreamer site report. The subordinate departure "(anth)" is used to designate anthropic horizons identified in the excavation profiles of House 2 at Ghost Lodge.

A

B

Figure 85. Intermittent Stream Cutbank Photos, Ghost Lodge Site (39ST120). A: Cutbank of the eastern bench (village area), east-southeast view (photo no. 2999, WCRM 1987). B: Cutbank of the western bench, west view (photo no. 2955, WCRM 1987).

Detailed soil descriptions of selected test unit profiles can be found in Appendix C. Soils horizons recorded in the test excavations at the site are discussed below. Horizon nomenclature generally follows Birkeland (1984).

Extramural Tests -- Eastern Bench. Tests 1, 2, and 7 were excavated into extramural contexts in the eastern bench. Each of these tests exhibits a somewhat different stratigraphic sequence due to localized variability in depositional events. However, the horizons recorded in the profiles of these tests are easily correlated, largely on the basis of texture and parent material associations. As an aggregate, the individual A horizons recorded in the profiles of the extramural tests in the eastern bench represent a cumulative A horizon. This cumulative A, which is as much as 80 cm thick, is formed principally in Sully silt loam.

Test 1 was placed near the extreme eastern boundary of the site near the base of a colluvial slope. It exhibits a relatively shallow A1/A2 horizon sequence in the Sully silt loam (SiL) to a depth of about 35 cm (Figures 86 and 87A). A 2A horizon was recorded in Test 1 beneath the A2 extending to a depth of about 60 cm. The 2A is a silty clay loam (SiCL) consisting of a mixture of clayey colluvium and loess. Intermingled bands of clay and silt loam were clearly visible in this horizon. The clayey colluvium doubtless derives from the slope just to the east of the test; the loess could also be of secondary colluvial origin from this same source. Fine charcoal staining, probably from past grass fires, was also observed in the 2A horizon. A clayey 3Bbk horizon was encountered immediately below the 2A at a depth of about 60 cm. The 3Bbk is thought to be a buried Sansarc clay or some related soil formed in colluvium derived from the Pierre Shale hills to the east of the site. Pierre Shale bedrock is probably present at no great depth beneath the 3Bbk horizon.

Test 2 was placed in a relatively flat area in the southern portion of the eastern bench. The upper profile of Test 2 exhibits a stratigraphic sequence very similar to that of Test 1. A1 and A2 horizons are present to a depth of about 35 cm (Figures 87B and 88). A 2A horizon consisting of mixed loess (silt loam) and clayey colluvium is present beneath the A2, extending to a depth of about 50 cm. The 2A is a silty clay loam that exhibits faint banding and some gray-colored mottling from the mixture of the clay with the loess by colluvial processes. These three horizons in Test 2 are correlatable with their counterparts in Test 1. A shift back to loess parent material occurs in Test 2 in the 3A horizon found beneath the 2A at a depth of about 50-75 cm (Figure 88). A clay designated as a 4Bbk horizon was recorded beneath the 3A at a depth of about 75 cm. The 4Bbk horizon is interpreted as a Sansarc clay or some related soil formed in either clayey colluvium or residuum. Pierre Shale residuum seems the most likely alternative because the 4Bbk in Test 2 appears to be a purer clay than the 3Bbk in Test 1. Nevertheless, the 4Bbk horizon in Test 2 is broadly correlatable with the 3Bbk horizon in Test 1. Pierre Shale bedrock is likely present at no great depth beneath the 4Bbk.

Test 7 was placed near the western edge of the eastern bench in the area of the house depressions. The soil horizon sequence in Test 7 is much the same as that in Test 1, except that the Sully silt loam is deeper in Test 7, exhibiting a third A horizon not recorded in Test 1. The Sully silt loam in Test 7 consists of A1, A2, and A3 horizons to a depth of about 55-60 cm

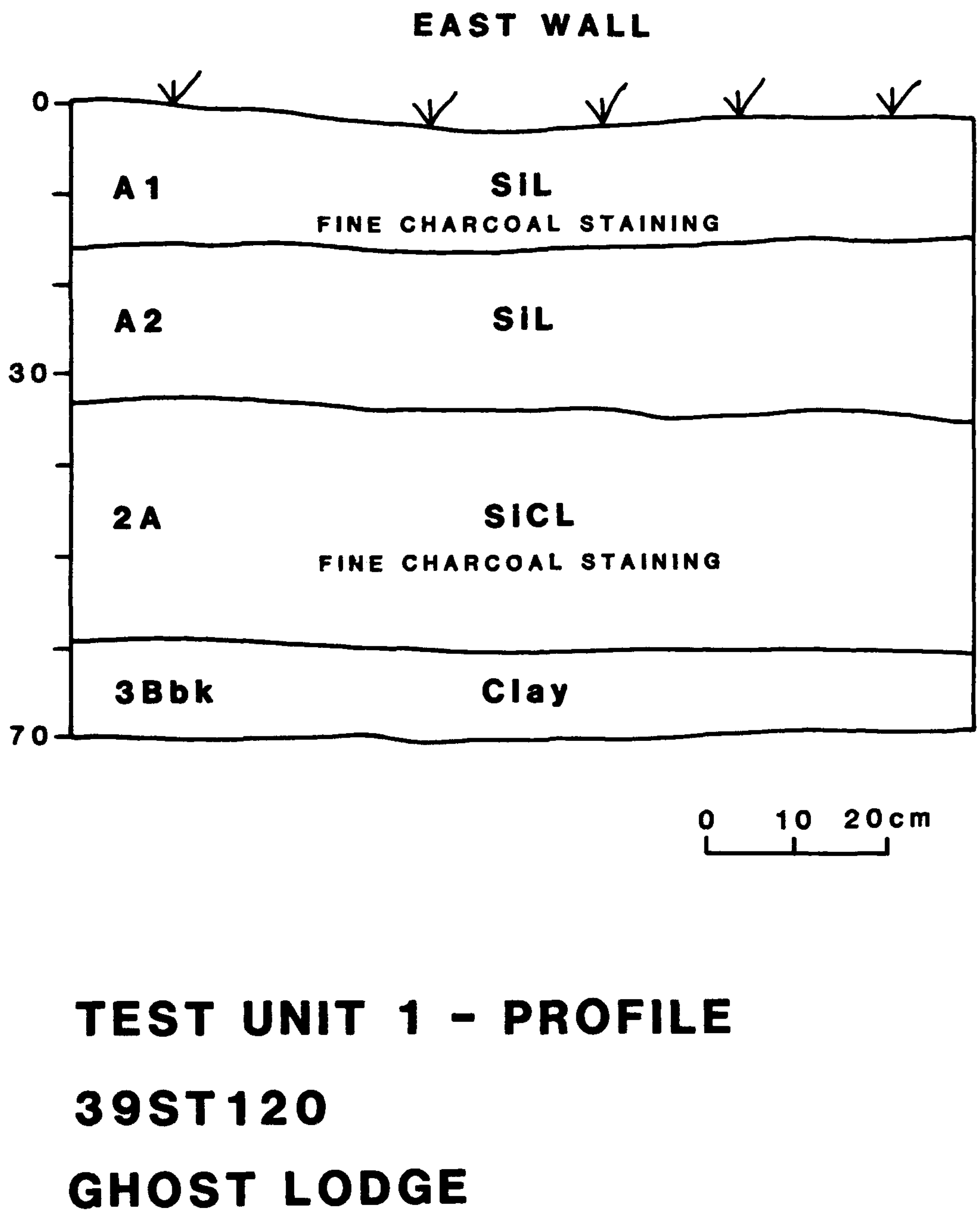
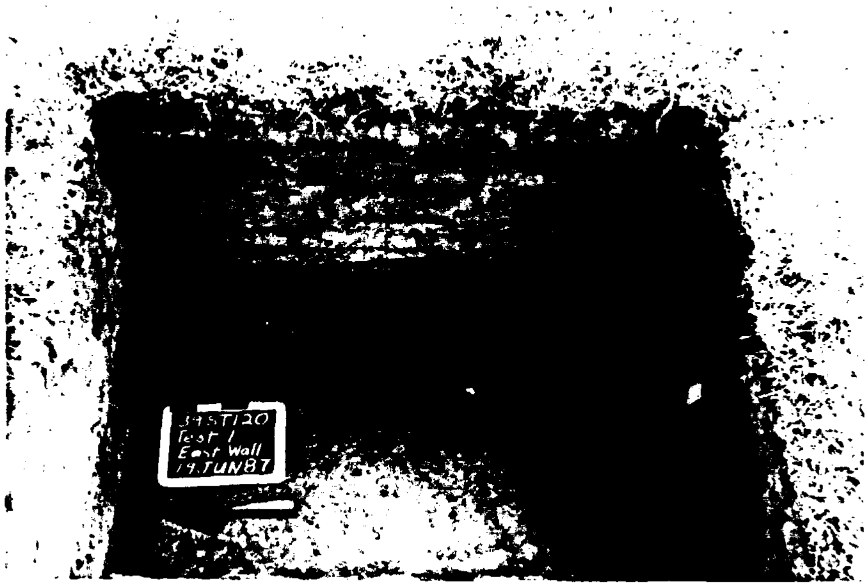


Figure 86. Profile Drawing of Test 1, Ghost Lodge Site (39ST120).



A

B

Figure 87. Profile Photos of Tests 1 and 2, Ghost Lodge Site (39ST120). A: East wall of Test 1 (photo no. 2966, WCRM 1987). B: North wall of Test 2 (photo no. 2965, WCRM 1987).

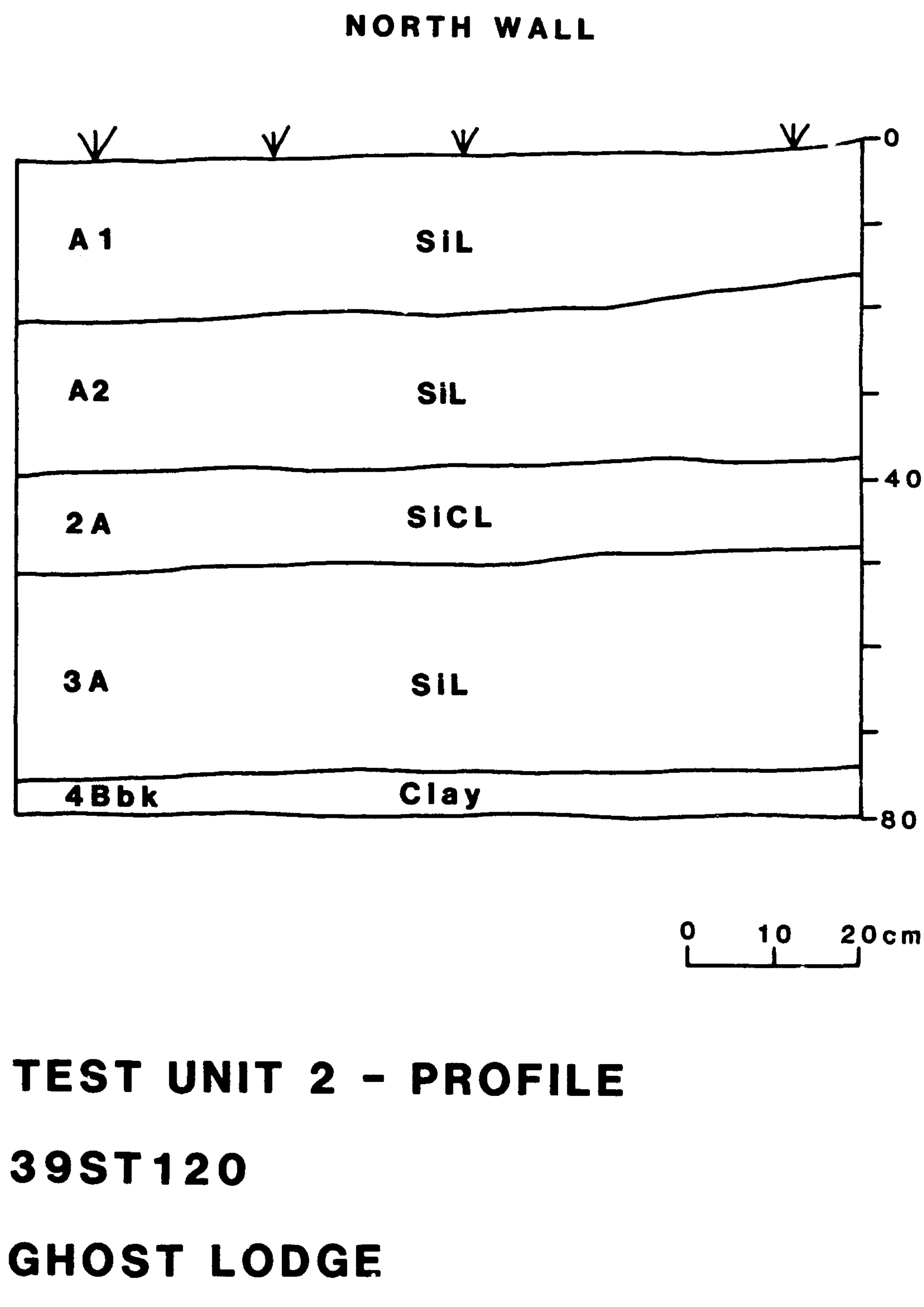


Figure 88. Profile Drawing of Test 2, Ghost Lodge Site (39ST120).

(Figures 89 and 90A). An area of heavy charcoal staining and flecking was recorded at the surface of the A3. This feature is attributed to the Post-Contact Coalescent component. A 2A horizon consisting of mixed loess (silt loam) and clayey colluvium is present beneath the A3 from about 60-80 cm. The 2A horizon is a silty clay loam that correlates quite well with its counterparts in Tests 1 and 2. It, too, is principally of colluvial origin, consisting of intermingled bands of clay and silt loam. A clayey 3Bbk horizon very similar to that in Test 1 is present beneath the 2A at a depth of about 80 cm. It is interpreted as a Sansarc clay or some related soil formed in clayey colluvium. As before, Pierre Shale bedrock is probably present at no great depth beneath the 3Bbk in Test 7.

Extramural Test 8 - Western Bench. Test 8 was placed in the west bench to document the cultural and natural stratigraphy in this part of the site. The western bench contains a somewhat deeper and older Sully soil than the eastern bench. Cumulative soil horizons extending to a depth of about 100 cm were recorded in the Sully silt loam in Test 8 (Figures 90B and 91). The upper A1 and A2 horizons, recorded from about 0-60 cm, are generally correlatable with their counterparts in the eastern bench. However, it is at this point that the stratigraphy of Test 8 and the western bench differs significantly from that in the eastern bench. Beneath the A2 is a thin Bk horizon overlying a thick buried soil designated as an Abk horizon. No stratigraphic units equivalent to the Bk and Abk horizons are present in the eastern bench. The Abk represents a former surface soil that has been buried by loess accumulation at the site. It is quite dark and prominent, and can be easily discerned in the cutbank of the western bench (Figure 85B). The Abk consists of a number of alternating dark and light depositional bands (Figure 90B). These bands reflect the relatively slow build up of the Abk as compared with the more rapid accumulation of the overlying cumulative horizons. The Abk is situated directly atop a clayey 2Bbk horizon interpreted as a Sansarc clay or some related soil formed in clayey colluvium. Pierre Shale bedrock is present beneath the 2Bbk at a depth of about 150-200 cm. The clayey colluvial unit overlying Pierre Shale bedrock in the western bench appears to be considerably thicker than that in the eastern bench based on observations made in the cutbank exposures along the stream channel (cf. Figure 85).

Tests 3-6 (House 2). Tests 3-6 were combined into a 1 X 4 m trench that was dug through the center of House 2 (Feature 2). The stratigraphic sequence includes three natural soil horizons overlying the two anthropic horizons that comprise the remains of the earthlodge (Figures 92 and 93). The natural horizons consist of a thin surface A, a transitional AB, and a Bw1. These are all relatively recent soil horizons formed in loess (silt loam) deposited in the house depression within the last 200 years or so. The anthropic horizons are also silt loams. They include a Bw2(anth), the outer rooffall zone of the structure, and an A(anth), the inner rooffall/floor zone. An isolated lens or layer of sandy loam was present in the outer rooffall in the south wall of Test 4. The floor of the house, located at the base of the A(anth) horizon, rests on a clayey 2Bbk horizon. This horizon is interpreted as a Sansarc clay or some related soil formed on clayey colluvium. It is generally correlatable with the other clayey Bbk horizons recorded in the extramural tests in the eastern bench.

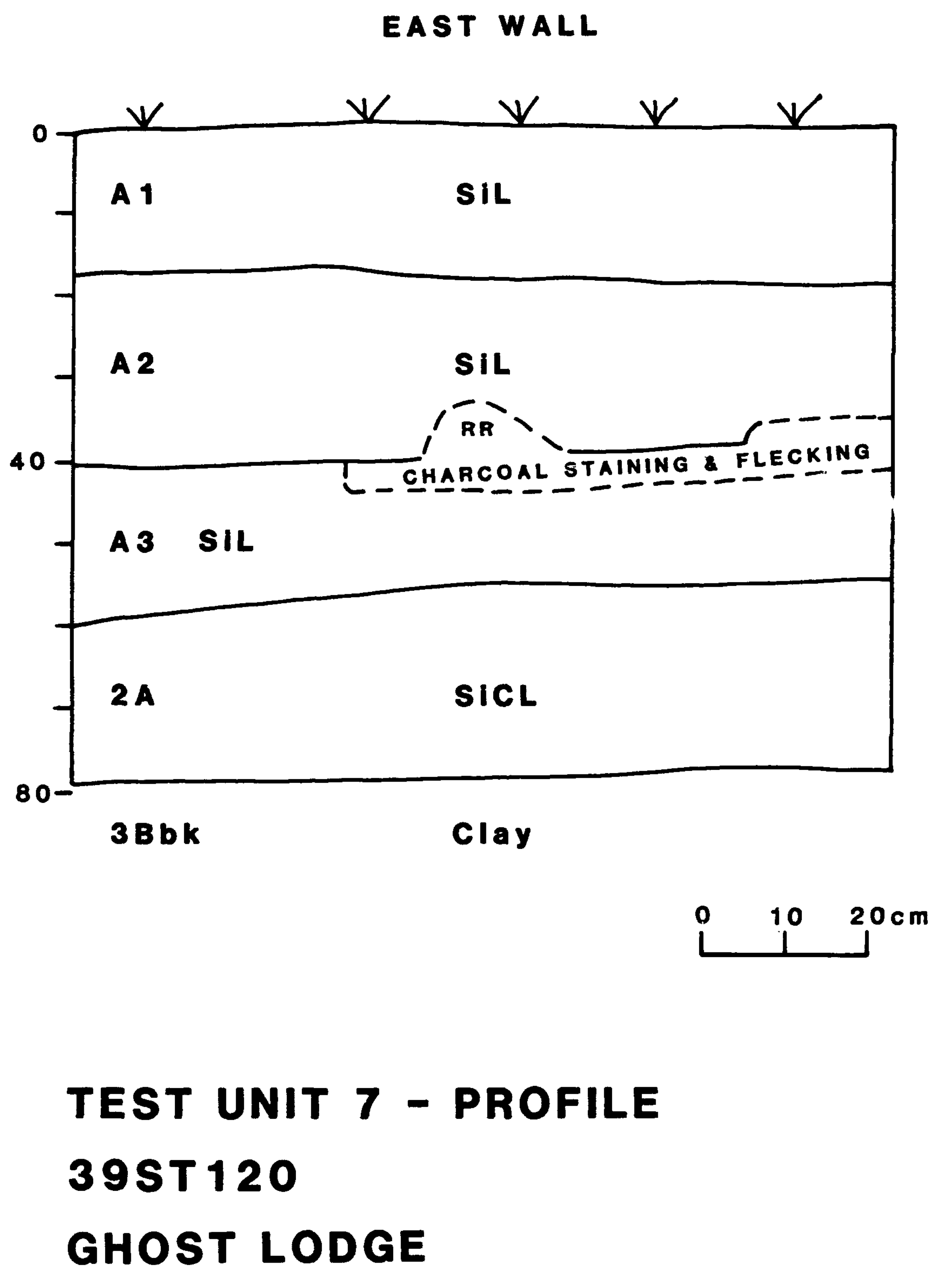
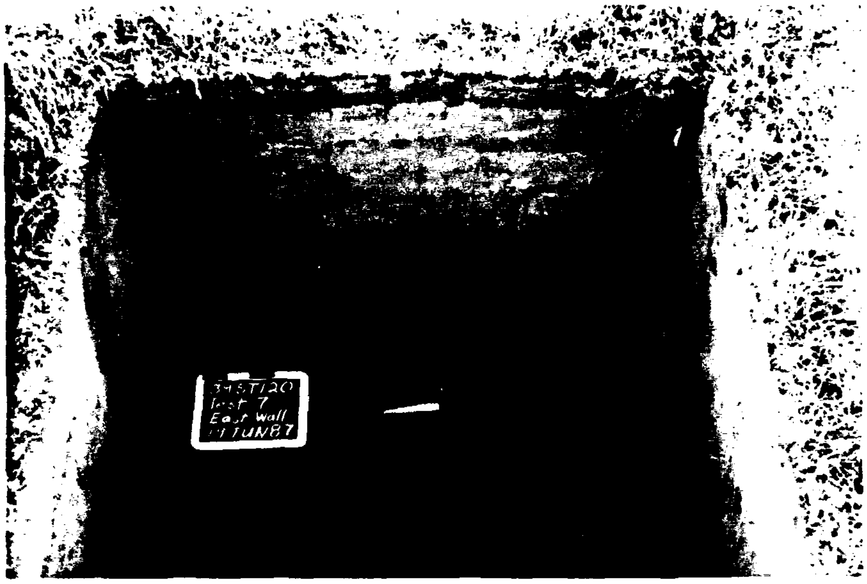
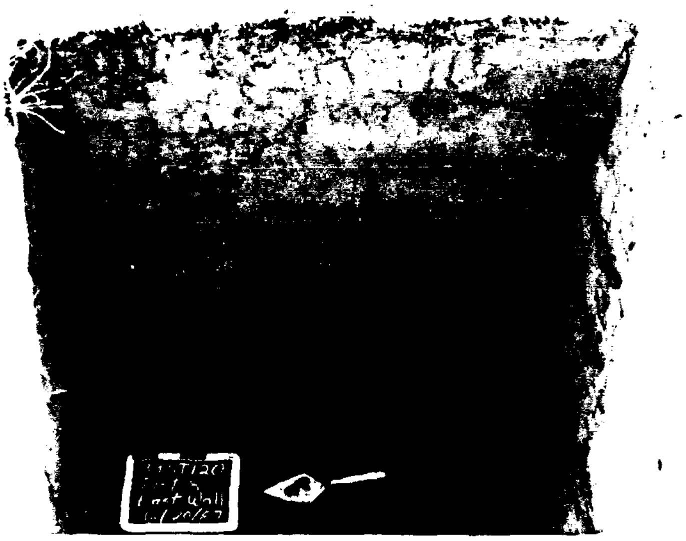


Figure 89. Profile Drawing of Test 7, Ghost Lodge Site (39ST120).



A



B

Figure 90. Profile Photos of Tests 7 and 8, Ghost Lodge Site (39ST120). A: East wall of Test 7 (photo no. 2969, WCRM 1987). B: East wall of Test 8 (photo no. 2976, WCRM 1987).

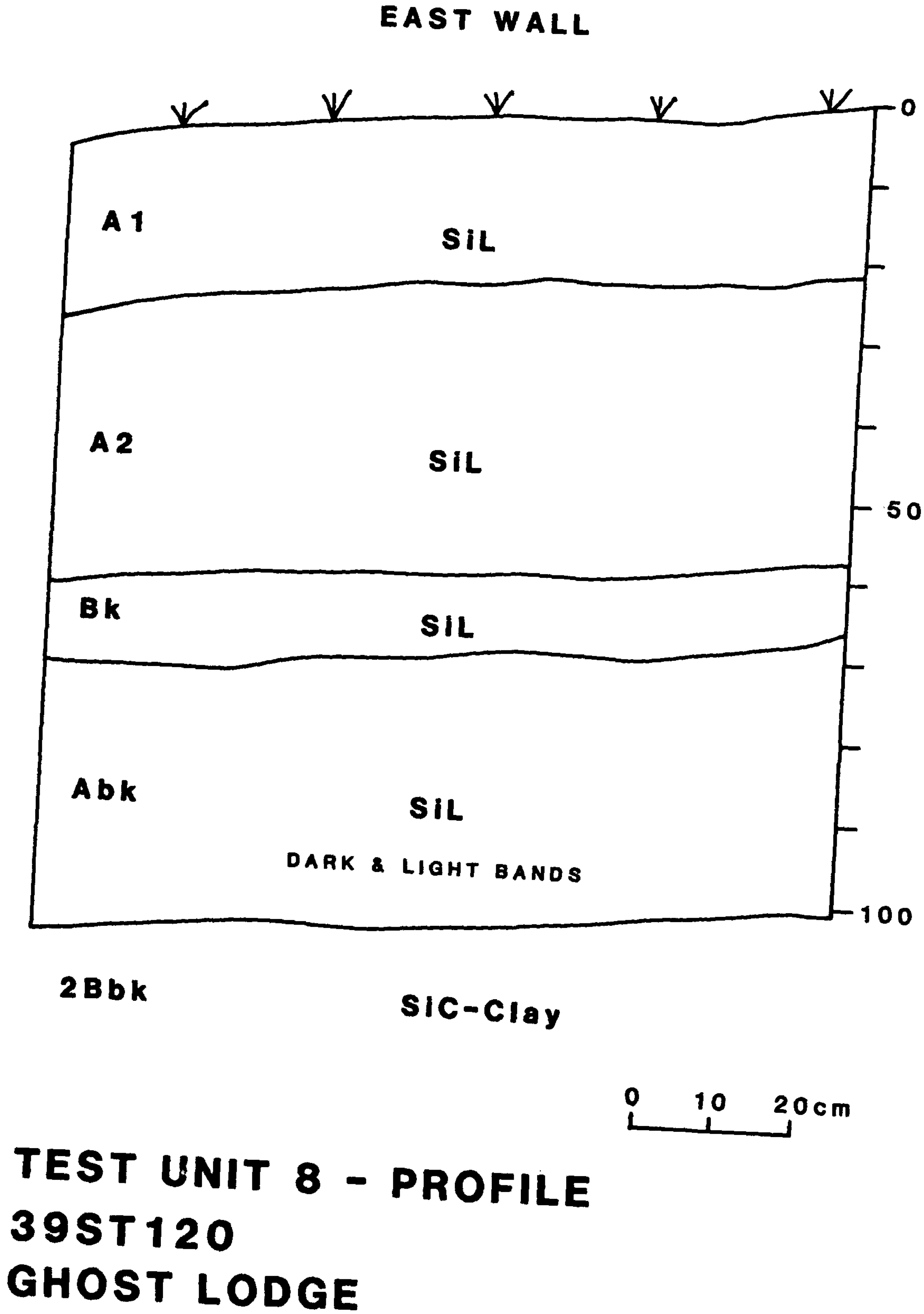


Figure 91. Profile Drawing of Test 8, Ghost Lodge Site (39ST120).

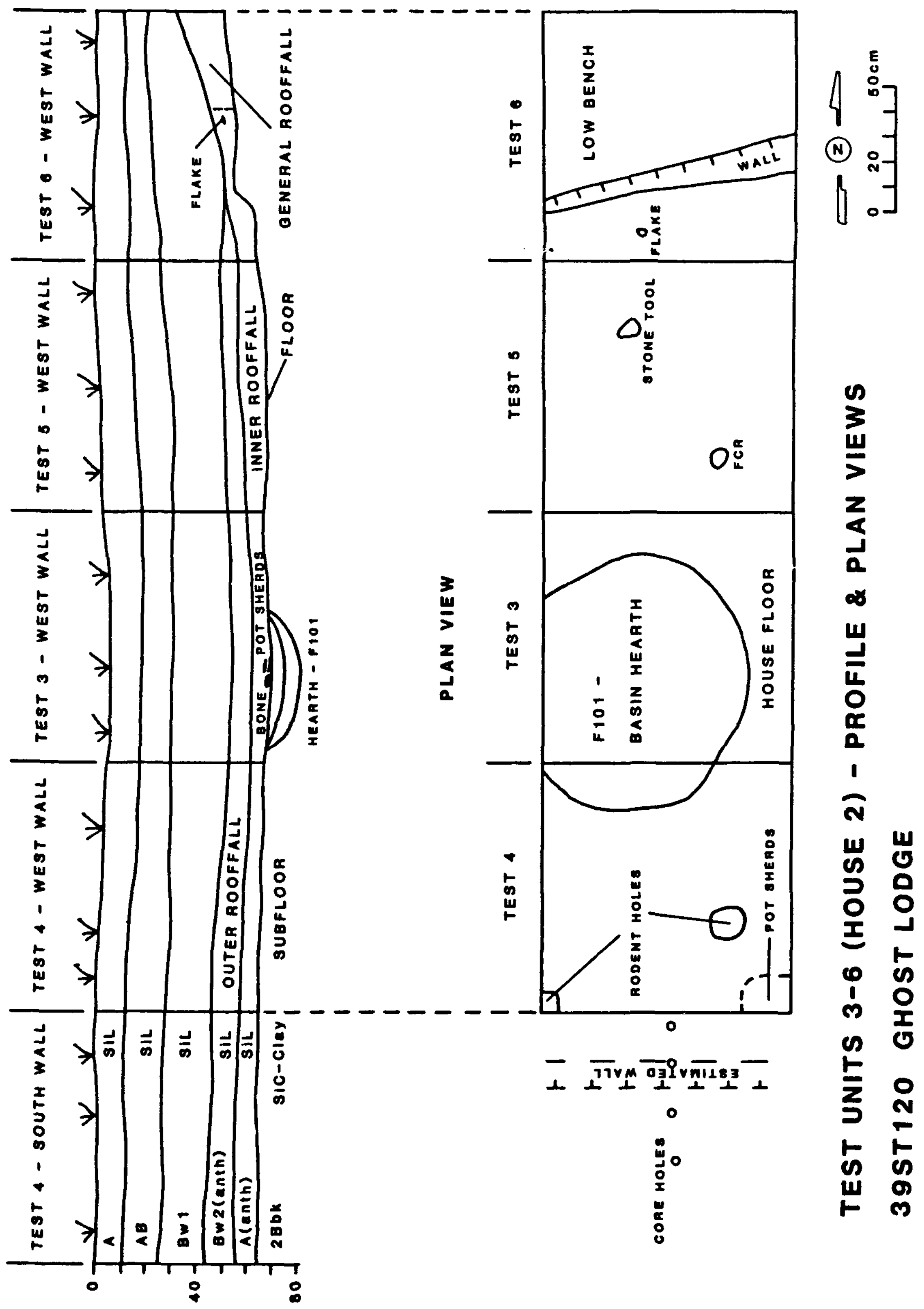
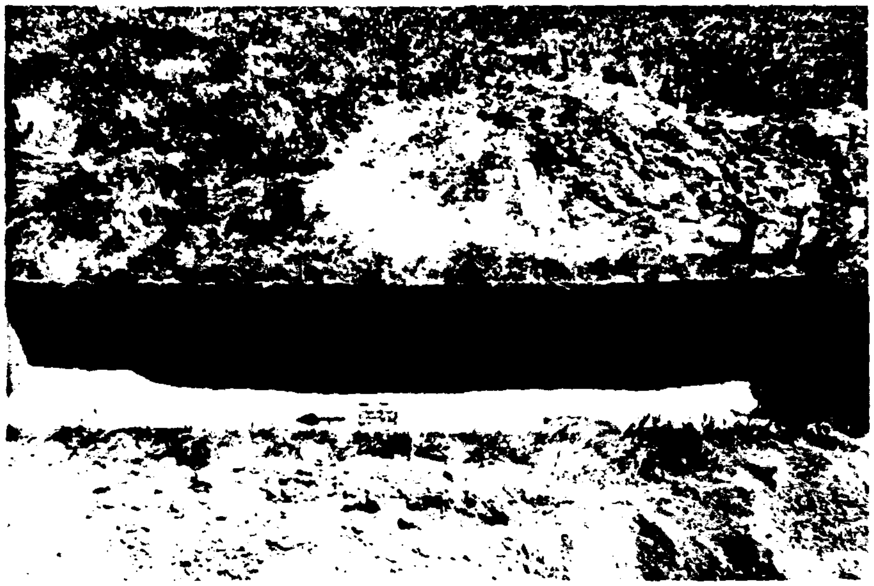
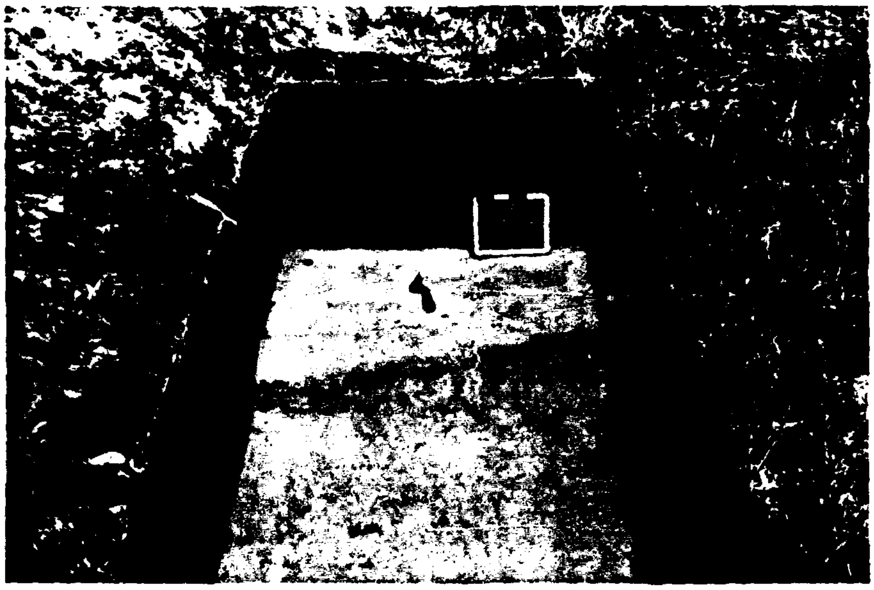


Figure 92. Profile and Plan Drawing of Tests 3-6, House 2, Ghost Lodge Site (39ST120).



A



B

Figure 93. Profile Photos of Tests 3-6, House 2, Ghost Lodge Site (39ST120).
A: East wall of Tests 3-6, House 2 (photo no. 2994, WCRM 1987).
B: North wall of Test 6, House 2 (photo no. 2987, WCRM 1987).

The profile of Feature 101, the central hearth of House 2, was partially recorded in the west wall of Test 3 (Figure 92). The fill of the hearth generally consisted of an upper layer of dark fill with modest amounts of charcoal over a lower layer of lighter colored, ashy fill. The hearth is a subfloor feature that is interposed between the A(anth) and 2Bbk horizons. The A(anth) exhibits only slight evidence of burning consisting of scattered charcoal fragments and burned earth. The lack of substantial burning in the inner rooffall zone indicates the house was not destroyed by fire. Most of the charcoal and burned earth were observed near the central hearth (F101), and they likely derive from the use of this feature.

Cultural Associations

The village occupation is obviously associated with the anthropic horizons identified in the House 2 test units. Isolating the occupation zone of the village component in extramural contexts is a much more difficult task because of the limited scope of the testing, low artifact densities, and considerable vertical artifact scatter within the loess cap. This blurring of the village occupation zone is the result of displacement of artifacts by burrowing animals and other natural processes.

Extramural Tests 1, 2, and 7 were placed at various locations in the eastern bench where the primary village occupation is located. Test 1 did not yield any artifacts. The actual eastern boundary of the site apparently lies somewhere to the west of the Test 1 location. Test 7, located in the area of the earthlodge depressions, yielded the most artifacts of any extramural test. It also produced other evidence that can be used to determine the stratigraphic position of the extramural village occupation zone. Artifacts were most concentrated from 30-50 cm surface depth (sd) in Test 7. A discontinuous zone of heavy charcoal staining and flecking is recorded in the profile of Test 7 at the surface of the A3 horizon at about 40 cm sd (Figure 89). On the basis of these associations, the village occupation zone is correlated with the surface of the A3 horizon in the general vicinity of Test 7. The few artifacts recovered from Test 2 were widely scattered from 10-40 cm sd. This association is generally relatable to the A2 horizon recorded in the profile of Test 2 (Figure 88). One can speculate on the basis of this limited information that the A2 horizon in Test 2 correlates with the A3 horizon in Test 7.

Test 8, which was located in the western bench, also yielded very few artifacts. A single Plains Village body sherd and a few small bone fragments were recovered from 10-30 cm sd. This depth is broadly correlatable with the interface of the A1 and A2 horizons identified in the profile of Test 8 (Figure 89). A few fragmentary pieces of bone were also recovered from 90-100 cm in Test 8 in association with the lower portion of the Abk horizon. One piece of bone from the Abk had been burned, which indicates a probable cultural origin for this material. An ephemeral prehistoric component of an unknown cultural affiliation is proposed for the base of the Abk in the western site area. No evidence of this component, stratigraphic or otherwise, was present in the eastern part of the site where the primary village occupation is located.

Archeological Components, Radiocarbon Dates, and Analytic Units

The Ghost Lodge site is known to contain at least one and possibly two archeological components on the basis of this research and previous research conducted at the site by UND. These are, in chronological order:

1. Plains Village, Post-Contact Coalescent (late A.D. 1700s; ca. 1780-1781 or slightly later?); and

2. Unknown Prehistoric (Plains Woodland period?).

Evidence for an unidentified prehistoric component consists entirely of a few bone fragments recovered from the base of the buried A horizon (Abk) in the western part of the site. No significance can be attributed to this presumed component at this time in view of its seemingly ephemeral nature. Based on stratigraphic correlation with the late Plains Woodland component at the Sitting Buzzard site (39ST122) (Section XII, this report), and the Sonota component at the Lost Nation site (39LM161) (Toom 1989b), the unknown component is of probable Plains Woodland affiliation. The village occupation at the site is identified as Post-Contact Coalescent. Ceramic evidence indicates an affiliation with the Bad River phase, which is considered to be protohistoric Arikara (cf. Hoffman and Brown 1967; Lehmer 1971; Lehmer and Jones 1968). The Post-Contact Coalescent component at Ghost Lodge is clearly of archeological significance. The balance of this section will focus on the characterization of this component.

Two radiocarbon dates were obtained from wood charcoal samples recovered from the hearth (F101) of House 2. On these basis of these dates, which are difficult to interpret precisely, and other temporal-cultural information, it is estimated that the Post-Contact Coalescent village was occupied during the late A.D. 1700s -- possibly during or immediately following the smallpox epidemic of 1780-1781. A detailed discussion of the Ghost Lodge radiocarbon dates and the estimated age of the village component can be found in Section XIII.

The main thrust of the analysis of artifactual remains recovered from the test excavations at Ghost Lodge is concerned with the evaluation of the Post-Contact Coalescent component, particularly the content of extramural versus intramural contexts. Consequently, most data are organized and presented according to these analytic units. With the exception of a few bone fragments from the basal levels of Test 8, all artifacts from the site are attributed to the Post-Contact occupation.

Features

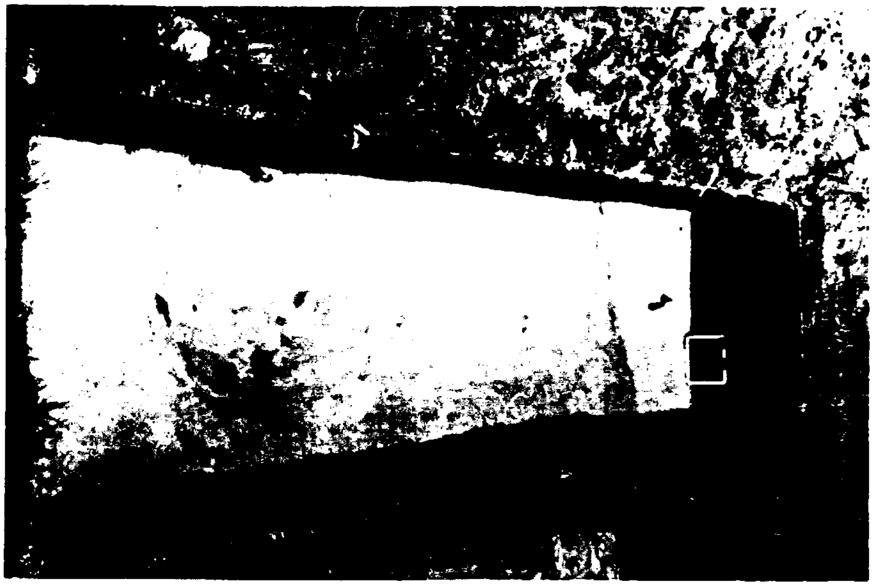
One structural feature consisting of the remains of a small earthlodge was tested at Ghost Lodge. Test 3-6 were combined into a 1 X 4 m excavation that was placed across the center of Feature 2 (F2), herein designated House 2 (Figure 82). The depression left by the collapse of House 2 is circular in shape, measuring approximately 5.0 m in diameter (Figure 84A). The depression is well formed, but relatively shallow and indistinct, reaching a maximum depth of only about 20 cm below the surrounding ground surface (Picha and Toom

1984). Feature 2 was selected for testing because hand coring yielded conclusive evidence of a hearth near the center of the depression. The House 2 excavation revealed a great deal about the general nature of the Post-Contact Coalescent dwellings at the site. However, it was not extensive enough to do more than suggest the overall configuration of these structural features. Comparisons with other Post-Contact Coalescent houses that were completely excavated at other sites are necessary to provide a more complete picture of the architecture represented at Ghost Lodge.

Tests 3-6 uncovered a portion of the floor area of the house, including a hearth, a part of the north wall of the house pit, and part of a narrow bench or platform surrounding the house pit (Figures 92 and 94). The south wall of the house pit was not reached by the excavation. It was located by hand coring approximately 30 cm to the south of the excavation (Test 4). House 2 was apparently a small, circular structure consisting of a shallow pit surrounded by a low, narrow bench or platform. The house pit, which includes the house floor proper, is approximately 3.5 m in diameter. It is dug into the subsoil to a depth of about 15 cm below the level of the bench. The bench itself does not appear to have been dug much more than about 10-20 cm beneath the former occupation surface. The total diameter of the house, including the bench, was probably about 5.0 m, as estimated by hand coring in the unexcavated portion of the house depression.

The central hearth of House 2, designated Feature 101 (F101), was the only intramural feature found in Tests 3-6. Most of the hearth was uncovered and excavated in Test 3, but a portion of it extended beyond the west wall of the test. While coming down on the floor level of the house in Test 3, a circular area of light colored soil was observed in the darker colored rooffall just above the hearth (Figure 95A). This circular area of light fill represents an impression (or void) left by the smoke hole above the hearth in the roof of the house after the house had collapsed. When the floor of the house was reached, the actual surface of the hearth appeared as a dark-colored soil matrix or stain containing artifactual debris (Figure 95B). The excavated portion of F101 consisted of a subfloor basin-shaped hearth that had a diameter of about 100 cm and reached a maximum depth of about 15 cm beneath the house floor (Figures 94 and 96). No definite posts or post holes were found in the excavation. Two small rodent holes were recorded in the house floor in Test 4, but it is fairly certain that these do not represent posts. The house had not burned, and no evidence of a superstructure was found in the excavated portion of the house. It is fairly certain, however, that the structure was covered by a blanket of earth approximately 20 cm thick.

The usual Bad River phase (Post-Contact Coalescent) earthlodges were rather large dwellings with a circular floor plan and a dome-shaped superstructure (Lehmer 1971:136-140). Those excavated at the Buffalo Pasture site, a large fortified village, ranged in mean diameter from a minimum of 8.9 m to a maximum of 14.8 m (Lehmer and Jones 1968). House 2 at Ghost Lodge is considerably smaller than the "typical" houses at Buffalo Pasture village. The other house depressions at Ghost Lodge vary from a minimum of 5.0 m to a maximum of 7.0 m in diameter, which is also well below the range of house diameters recorded at Buffalo Pasture. Unusually small, circular earthlodges are reported for the Post-Contact Coalescent component at the Fire Heart Creek site (Lehmer 1966). This component is interpreted as an Arikara hunting camp.



A

B

Figure 94. Photos of Tests 3-6, House 2, and Feature 101 (Basin Hearth), Ghost Lodge Site (39ST120). A: North view of the central hearth (F101, foreground), floor, wall, and bench of House 2 after excavation (photo no. 2985, WCRM 1987). B: South view of the bench (foreground), wall, floor, and central hearth (F101) of House 2 after excavation (photo no. 2981, WCRM 1987).

A

B

Figure 95. Photos of Feature 101, Central Basin Hearth of House 2, Ghost Lodge Site (39ST120). A: Light colored soil immediately above Feature 101 marking smoke hole void in rooffall, north view (photo no. 2961, WCRM 1987). B: Dark soil stain of Feature 101 at floor level before excavation, west view (photo no. 2970, WCRM 1987).

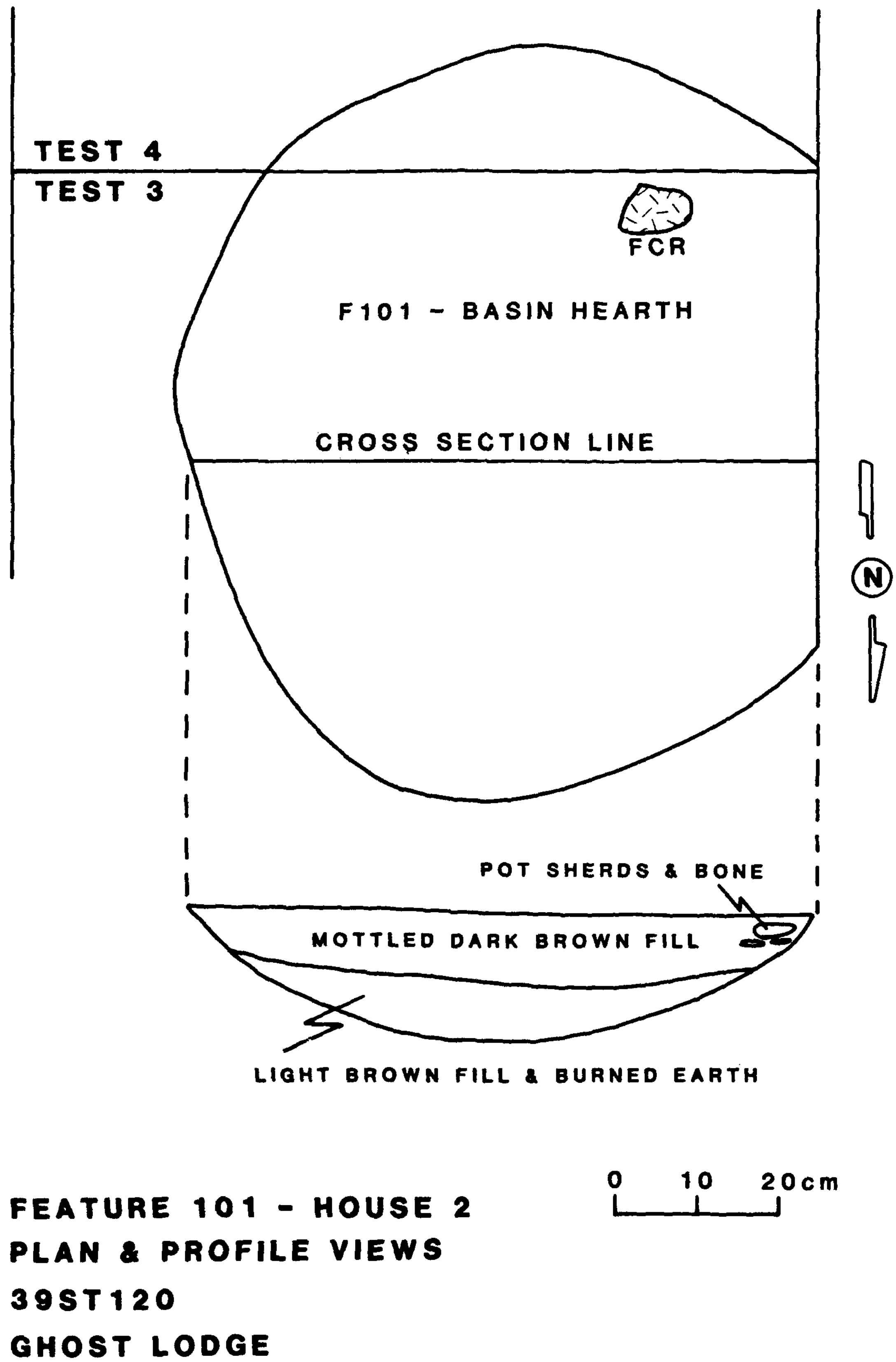


Figure 96. Plan and Profile Drawing of Feature 101, Central Basin Hearth of House 2, Ghost Lodge Site (39ST120).

In describing the circular houses at Fire Heart Creek, Lehmer states that:

> The late houses were conical structures made by leaning poles against stringers which rested on the tops of four primary support posts set in a square around a central firepit. This type of house stands in sharp contrast to the larger and more solidly constructed earthlodges of the late permanent villages in the region. The conical lodge of the sort found at Fire Heart Creek was, however, commonly used by a number of Plains tribes in semi-permanent hunting camps. Wilson's description of the Hidatsa hunting lodge (1934:411-415) is a classic one. Metcalf (1963:22-25) gives an excellent summary of this house type, and Bowers presents a detailed discussion of both the structure and its ritual association with the eagle-trapping ceremonies of the Mandan and Hidatsa (Bowers 1950:207-208, 232-235) (Lehmer 1966:66).

The conical earthlodges or "hunting lodges" excavated at Fire Heart Creek ranged in diameter from a minimum of 4.3 m to a maximum of 7.0 m, with a mean value of about 5.5 m (Lehmer 1966:16). These values are in good agreement with the estimated diameters of the houses at Ghost Lodge, and it is thought that the Ghost Lodge houses represent a similar type of semipermanent dwelling.

Native Ceramics

Native ceramic sherds recovered from the test excavations at Ghost Lodge total 337 G1-3 sized specimens, including 323 body sherds and 14 rim sherds. There is no evidence of multiple ceramic components in the sample, and all of the native ceramics from the site are attributed to the village component. The Ghost Lodge ceramics are characteristic of a Post-Contact Coalescent variant assemblage (cf. Johnson 1980) of probable Bad River phase (Arikara) affiliation (cf. Lehmer and Jones 1968). They are one of the primary criteria for the identification of the village component as Post-Contact Coalescent.

The ceramic sample is highly fragmented. No complete or even partially complete and reconstructable vessels are present in the collection, although it was possible to reconstruct one relatively large rim section. Most sherds are from globular-shaped jars. One rim appears to be from a small bowl. Overall, the ceramics from the site are relatively thick and of comparatively poor quality. The paste is somewhat porous and tempered with crushed granite (grit). A tendency toward longitudinal splitting was observed on a number of the larger sherds. This is probably attributable to the porosity of the paste. The majority of the sherds are gray to grayish black in color.

Body Sherds

The body sherd sample from Ghost Lodge consists of 323 specimens, including 12 G1, 74 G2, and 237 G3 sherds. Of this number, 43 sherds were recovered from extramural test units, and 280 were recovered from the House 2 tests (Table 67). Test 3 produced the most body sherds from House 2 (n=144), with slightly over half (n=79) of these specimens coming from the hearth (F101).

Table 67. Native Ceramic Body Sherd Size Grade Data by Test Unit and Context, Post-Contact Coalescent Component, Ghost Lodge Site (39ST120).

Context/ Test Unit		Size Crade Grade 1	Grade 2	Grade 3	Total
Extramural Tests					
1	n	-	-	-	-
	%	-	-	-	-
2	n	1	1	3	5
	%	20.0	20.0	60.0	100.0
7	n	-	4	33	37
	%	-	10.8	89.2	100.0
8	n	-	-	1	1
	%	-	-	100.0	100.0
Subtotal	n	1	5	37	43
	%	2.3	11.6	86.1	100.0
House 2 Tests					
3	n	3	39	102	144
	%	2.1	27.1	70.8	100.0
4	n	8	19	52	79
	%	10.1	24.1	65.8	100.0
5	n	-	10	30	40
	%	-	25.0	75.0	100.0
6	n	-	1	16	17
	%	-	5.9	94.1	100.0
Subtotal	n	11	69	200	280
	%	3.9	24.6	71.4	99.9
Total	n	12	74	237	323
	%	3.7	22.9	73.4	100.0

Body sherd surface treatments were recorded for all G1-2 sized specimens (Table 68). Classifiable body sherds are dominated by simple-stamped (56.3%) and plain/smoothed (28.0%) surface treatments. A lesser number of sherds exhibit brushing (14.1%) and one sherd (1.6%) was decorated with trailed or incised lines. An additional 22 body sherds were recorded as indeterminate. Virtually all of the classifiable specimens (92.2%) are from the House 2 test units (Table 68).

Maximum thicknesses for a sample of G2 sherds (catalog nos. 308, 309, and 406; n=36) from rooffall/floor zone of House 2 were also recorded. A mean value of 5.5±1.5 mm was computed for these specimens. This value is considerably higher than the mean maximum thicknesses of 4.6±0.8 mm and 2.9±0.8 mm recorded for the Extended Coalescent components at the West Bend (39HU83) and Buzzing Yucca (39LM166) sites, respectively. It is very close to the mean maximum thickness of 5.6±1.0 mm recorded for the Initial Middle Missouri component at the Antelope Dreamer site (39LM146). However, the larger standard deviation associated with the Ghost Lodge value indicates a higher degree of variability in body sherd thickness in the Ghost Lodge sample. Body sherd surface treatment and thickness data support a Post-Contact Coalescent interpretation (cf. Johnson 1980).

Rim Sherds and Vessels

Rim sherds from the test excavations at Ghost Lodge total 14 specimens, including 3 G1, 6 G2, and 5 G3 rims. All but one of the rims are from the House 2 test units; the exception is from Test 7. After matching, the 14 rims were found to represent a total of only six vessels. The four classifiable rims in the sample consist of various types of Stanley Braced Rim ware (75%) and Talking Crow ware (25.0%) vessels (Table 69). Two vessels are indeterminate or unclassified. Stanley Braced Rim ware is associated exclusively with the Post-Contact Coalescent variant (Johnson 1980), particularly the Bad River phase which is centered in the upper portion of the Big Bend region (Hoffman and Brown 1967; Lehmer 1971; Lehmer and Jones 1968). Talking Crow ware is most frequently associated with the Post-Contact Coalescent variant, although it is also commonly found in Extended Coalescent assemblages. Talking Crow ware is a minor component of Bad River phase ceramic samples. The high percentage of Stanley ware in the Ghost Lodge assemblage is indicative of a Post-Contact Coalescent occupation of probable Bad River phase affiliation. Descriptions of the ceramic types identified in the Ghost Lodge sample are contained in the following paragraphs. Selected specimens are illustrated in Figure 97.

Stanley Tool Impressed. Vessels 1 and 2; n= 2; Figure 97A-B.

Ware: Stanley Braced Rim Type: Stanley Tool Impressed
Rim form: straight/curved.
Exterior rim decoration: undecorated.
Lip decoration: tool impressed, small punctates.
Decoration motif: horizontal rows of small punctates or dots.
Exterior rim surface treatment: smoothed/brushed (n=1) and brushed (n=1).
Lip form: thickened (braced), rounded (n=1) or beveled (n=1).

Table 68. Native Ceramic Body Sherd Surface Treatment Data by Test Unit and Context, Size Grades 1 and 2 Only, Post-Contact Coalescent Component, Ghost Lodge Site (39ST120).

Test Unit		Plain/ Smoothed	Simple Stamped	Brushed	Decorated	Total Class.	Indet.	Total
Extramural Tests								
1	n	-	-	-	-	-	-	-
	%*	-	-	-	-	-	-	-
2	n	-	-	2	-	2	-	2
	%	-	-	100.0	-	100.0	-	-
7	n	1	2	-	-	3	1	4
	%	33.3	66.7	-	-	100.0	-	-
8	n	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-
Sub-total	n	1	2	2	-	5	1	6
	%	20.0	40.0	40.0	-	100.0	-	-
House 2 Tests								
3	n	9	14	7	-	30	12	42
	%	30.0	46.7	23.3	-	100.0	-	-
4	n	4	16	-	-	20	7	27
	%	20.0	80.0	-	-	100.0	-	-
5	n	4	3	-	1	8	2	10
	%	50.0	37.5	-	12.5	100.0	-	-
6	n	-	1	-	-	1	-	1
	%	-	100.0	-	-	100.0	-	-
Sub-total	n	17	34	7	1	59	21	80
	%	28.8	57.6	11.9	1.7	100.0	-	-
Total	n	18	36	9	1	64	22	86
	%	28.0	56.3	14.1	1.6	100.0	-	-

*Percentages are calculated based on the total number of classifiable sherds; indeterminate body sherds are excluded from percentage calculations.

Table 69. Native Ceramic Wares and Types, Ghost Lodge Site (39ST120).

Ware	Ware* n	Ware* %	Type	Type n	Type %
Stanley Braced Rim	3	75.0	Stanley Tool Impressed	2	66.7
			Stanley Cord Impressed	1	33.3
Subtotal, Stanley Braced Rim Ware				3	100.0
Talking Crow	1	25.0	Talking Crow Plain	1	100.0
Indeterminate	2	0.0	Indeterminate or Unclassified	2	100.0
Total	6	100.0		6	100.0

*Ware percentages include classifiable rims/vessels only.

The Stanley Tool Impressed type was first defined for Post-Contact Coalescent components in the vicinity of Oahe Dam (Lehmer 1954:45). The type was later used as a distinguishing characteristic of the Bad River phase (Lehmer and Jones 1968:26, 98).

Stanley Cord Impressed. Vessel 4; n= 1; Figure 97C.

Ware: Stanley Braced Rim   Type: Stanley Cord Impressed
Rim form: straight/curved.
Exterior rim decoration: undecorated.
Lip decoration: cord impressed.
Decoration motif: horizontal lines.
Exterior rim surface treatment: plain/smoothed.
Lip form: thickened (braced), rounded.

The Stanley Cord Impressed type was also first defined for Post-Contact Coalescent components in the vicinity of Oahe Dam (Lehmer 1954:45). It, too, was later used as a distinguishing characteristic of the Bad River phase (Lehmer and Jones 1968:26, 98).

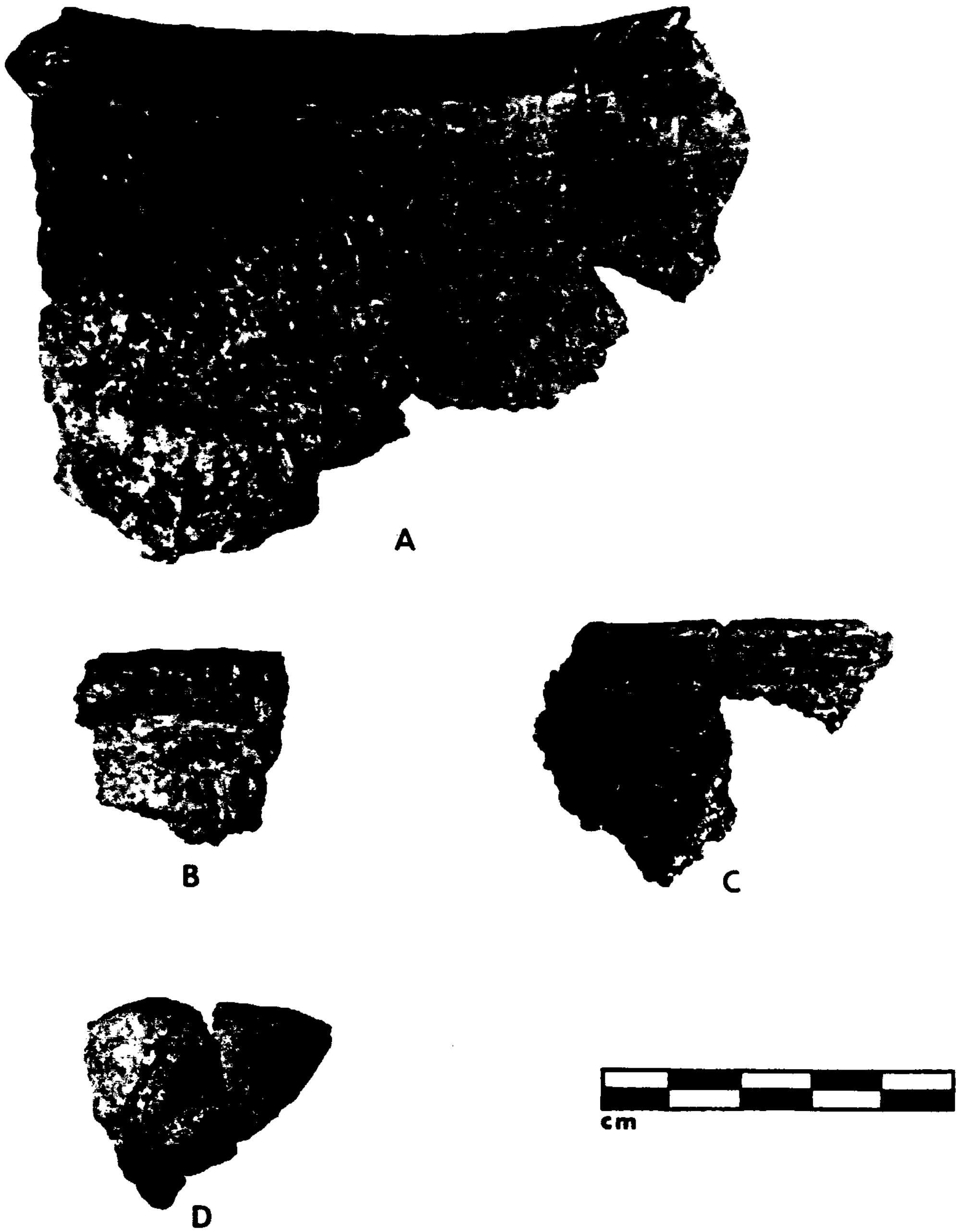


Figure 97. Photos of Native Ceramic Rim Sherds, Ghost Lodge Site (39ST120).
A-B: Stanley Tool Impressed. C: Stanley Cord Impressed.
D: Small unclassified bowl.

Talking Crow Plain. Vessel 6; n=1.

Ware: Talking Crow Type: Talking Crow Plain
Rim form: straight/curved.
Exterior rim decoration: undecorated.
Lip decoration: undecorated.
Decoration motif: not applicable.
Exterior rim surface treatment: plain/smoothed.
Lip form: unthickened, rounded.

The type Talking Crow Plain was defined for Post-Contact Coalescent components located in the vicinity of Oahe Dam (Lehmer and Jones 1968:30). The type is a minor element of Bad River phase assemblages (Lehmer and Jones 1968:98). Talking Crow Plain is more or less equivalent to the Talking Crow Straight Rim type which was first defined for both Extended Coalescent and Post-Contact Coalescent components in the lower Big Bend region (cf. Johnson 1980; Smith 1977:58-59).

Indeterminate and Unclassified. Vessels 3 and 5; n=2. Vessel 3 is a plain rim and body section that appear to be from a small bowl-shaped vessel (Figure 97D). This vessel is difficult to accommodate within the present classification system (cf. Johnson 1980), but a type of Le Beau Bowl is defined for the Post-Contact Coalescent component at the Swan Creek site (Hurt 1957:37-38). Vessel 5 is an extremely small lip fragment that cannot be reliably classified.

Stone Tools

Ten stone tools were recovered from the test excavations at Ghost Lodge. Descriptive categories represented in the sample include patterned biface fragments (n=1), unpatterned bifaces and nonbipolar cores and core-tools (n=5), end scrapers (n=1), other retouched and modified flakes (n=1), bipolar cores/tools (n=1), and unpatterned pecked/ground stone tools (n=1). All of the tools are single function implements attributed to the Post-Contact Coalescent component. The small number of tools in the sample limits their interpretive value, but some unusual technological-functional associations are apparent. Another factor that must be given serious consideration is the degeneration and abandonment of traditional Plains Village lithic technologies during the post-contact (protohistoric and historic) period (cf. Ahler and Swenson 1985; Goulding 1980; Lehmer 1971; Toom 1979, 1989c).

Tool Technology

Technological classification of the Ghost Lodge stone tools is summarized according to test unit and archeological context in Table 70. Six of the ten potential technological classes are represented in the sample. This range is rather narrow for a village site. The majority of the tools are irregular unpatterned bifaces (50.0%). All are from the House 2 excavation. Five (50%) of the tools were found in the central hearth (F101) of House 2. The limited technological variability seen in the Ghost Lodge stone tool sample is probably a reflection of small sample size and the limited extent of the test

Table 70. Stone Tool Technological Class Data by Extramural and Intramural Contexts, Ghost Lodge Site (39ST120).

Technological Class		Extramural Test 1	Extramural Test 2	Extramural Test 7	Extramural Test 8	House 2 Tests 3-6	Total
1 Small Thin Patterned Bifaces	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
2 Large Thin Patterned Bifaces	n	-	-	-	-	1	1
	%	-	-	-	-	10.0	10.0
3 Irregular Unpatterned Bifaces	n	-	-	-	-	5	5
	%	-	-	-	-	50.0	50.0
4 Patterned Flake Tools	n	-	-	-	-	1	1
	%	-	-	-	-	10.0	10.0
5 Unpatterned Flake Tools	n	-	-	-	-	1	1
	%	-	-	-	-	10.0	10.0
6 Thick Bifacial Core-Tools	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
7 Nonbipolar Cores-Tools	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
8 Bipolar Core-Tools	n	-	-	-	-	1	1
	%	-	-	-	-	10.0	10.0
9 Unpatterned Pecked/Ground Stone Tools	n	-	-	-	-	1	1
	%	-	-	-	-	10.0	10.0
10 Patterned Pecked/Ground Stone Tools	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
Total	n	-	-	-	-	10	10
	%	-	-	-	-	100.0	100.0

excavations. However, the degeneration and abandonment of traditional lithic technologies during the post-contact period may be a significant contributing factor.

Technology and Lithic Raw Materials

Lithic raw material type frequency data for the technological classes identified in the Ghost Lodge assemblage are contained in Table 71. Seven different raw material types are represented. The majority of the tools are made of locally available raw materials (80.0%). Jasper/chert was the most frequently used local lithic type. The balance of the sample consists of a single tool of plate chalcedony from the western resource group and another implement of Bijou Hills silicified sediment from the southern resource group. The sample is too small to establish any sort of reliable pattern of lithic resource utilization. Nevertheless, the materials represented are not inconsistent with those identified in other Post-Contact Coalescent assemblages in the Lake Sharpe area (cf. Johnson 1984a; Toom 1984a). The only notable exception is the absence of Flattop chalcedony, a nonlocal lithic type of the western resource group. The lack of Flattop chalcedony in the tool sample is probably a function of sample bias because this lithic raw material type is identified in the flaking debris sample.

Function and Use-Phase

Data on the functional classification of the stone tools from Ghost Lodge are presented according to use-phase class in Table 72. The tool sample shows a narrow range of functions for a village assemblage, which is also a reflection of the limited number of technological types. As before, this is either a product of sample bias or an indication of the deterioration of stone tool technology among the post-contact occupants of the site. More extensive excavations are required to conclusively resolve this issue. Nevertheless, the functional analysis does suggest that degenerative forms of chipped stone tools were in use at the site. The majority of the tools are finished specimens that were broken or exhausted during use (use-phase 4). A brief discussion on the general functional groups and specific functional classes represented in the assemblage follows. The Antelope Dreamer site report contains more complete information on stone tool functional groups and classes. Selected specimens are illustrated by functional class in Figure 98.

The majority of the tools in the site sample are classified as expedient general purpose cutting tools (class 08). These implements were used in a variety of cutting or shredding tasks (Ahler and Swenson 1985:330). Patterned scraping tools that were used on both soft (class 06 and 13) and hard (class 17) materials are the second most common implements. The balance of the assemblage consists of a retouched or utilized flake used on variable material (class 23), a bipolar core/punch/wedge/chisel (class 25), and a simple hand-held abrading tool (class 33).

The truly remarkable thing about the tool sample is the apparent degeneration of chipped stone tool manufacture and use at the site. What one sees on some tools is the occurrence of certain functional classes on what are ordinarily incompatible or atypical technological forms. Furthermore, some

Table 71. Stone Tool Raw Material Type Data by Technological Class, Ghost Lodge Site (39ST120).

Resource Group/ Raw Material		Technological Class 2	3	4	5	8	9	Total n	%
<u>Local Resource Group</u>									
03 Coarse Red TRSS		-	1	-	-	-	-	1	10.0
06 Jasper/Chert		-	1	1	1	1	-	4	40.0
19 Granitic		-	1	-	-	-	-	1	10.0
21 Compact Sandstone		-	-	-	-	-	1	1	10.0
37 Pierre Shale		-	1	-	-	-	-	1	10.0
Subtotal, Local		-	4	1	1	1	1	8	80.0
<u>Western Resource Group</u>									
11 Plate Chalcedony		1	-	-	-	-	-	1	10.0
<u>Southern Resource Group</u>									
15 Bijou Hills SS		-	1	-	-	-	-	1	10.0
Subtotal, Nonlocal		1	1	-	-	-	-	2	20.0
Total	n	1	5	1	1	1	1	10	100.0
	%	10.0	50.0	10.0	10.0	10.0	10.0	100.0	

Table 72. Stone Tool Functional Class Data by Use-Phase Class, Ghost Lodge Site (39ST120).

General Functional Group/ Specific Functional Class		Use-Phase Class 1	2	3	4	Total
3. Patterned or Heavy Duty Scraping Tools						
06 Light duty transverse scraper used on soft material		-	-	1	-	1
13 Lateral scraper used on soft material		-	-	-	1	1
17 Transverse scraper used on hard material		-	-	-	1	1
Subtotal		-	-	(1)	(2)	(3)
4. Jagged Expedient Cutting Tools						
08 Expedient general purpose cutting tool		-	-	2	2	4
5. Prepared or Regularly Modified Unpatterned Flake Tools						
23 Retouched or utilized flake used on variable material		-	-	-	1	1
12. Bipolar Tools or Potential Tools						
25 Core/punch/wedge/chisel		-	-	-	1	1
13. Grinding Tools						
33 Simple hand-held abrading tool		-	-	-	1	1
Total	n	-	-	3	7	10
	%	-	-	30.0	70.0	100.0

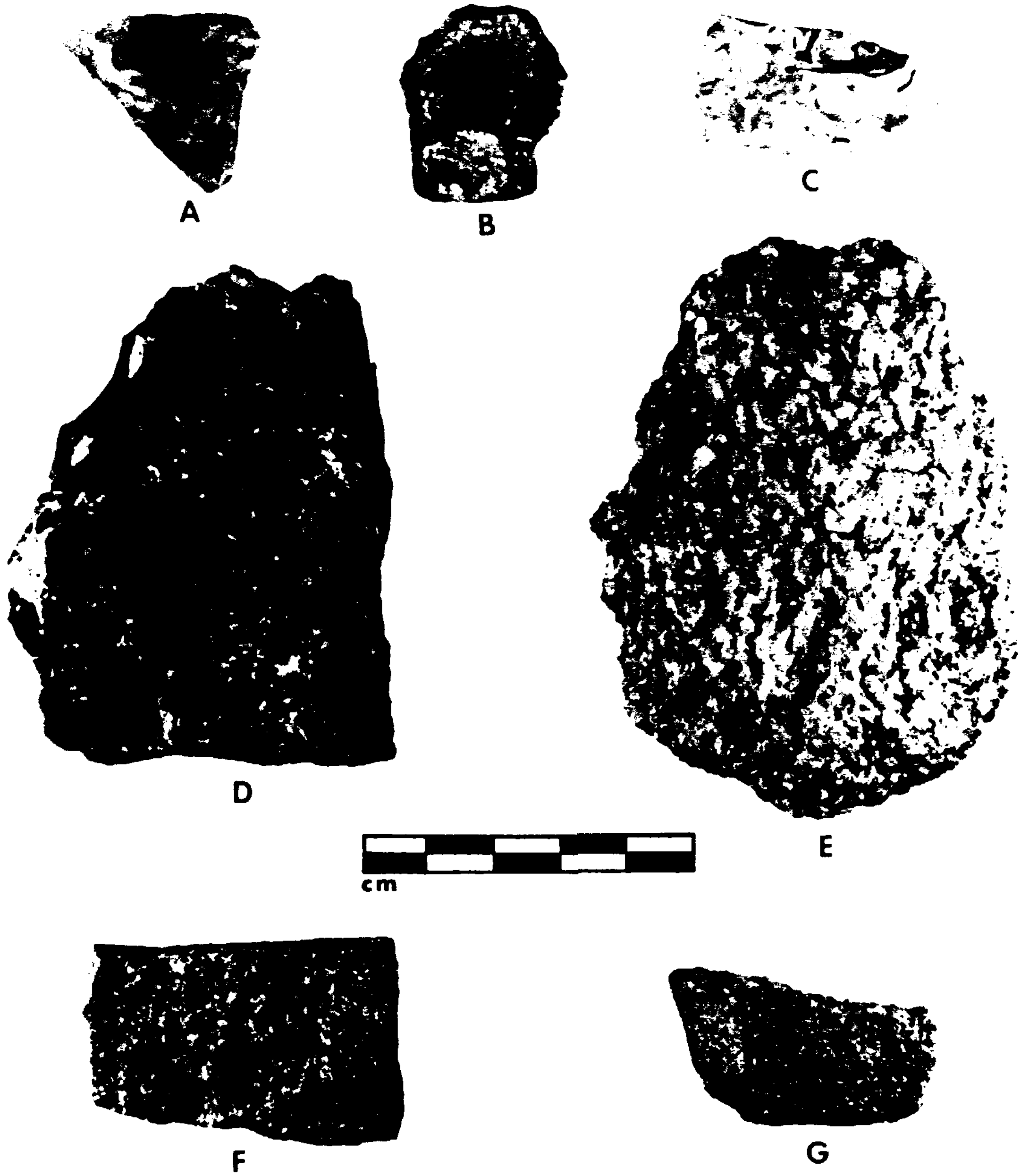


Figure 98. Photos of Chipped and Ground Stone Tools, Ghost Lodge Site (39ST120). A: Lateral scraper used on soft material (class 13). B: Transverse scraper used on hard material (class 17). C-E: Expedient general purpose cutting tools (class 08). F: Light duty transverse scraper used on soft material (class 06). G: Simple hand-held abrading tool (class 33).

raw material types that were usually restricted to the manufacture of ground stone tools were used in the manufacture of chipped stone tools at Ghost Lodge. For example, the class 06 scraping tool was observed on an irregular unpatterned biface — class 06 scraping tools are usually identified on patterned flake tools (end scrapers). The class 17 scraping tool does occur on what is classified as a patterned flake tool, but the manufacture of this tool is decidedly crude and merely approximates the typical end scraper form. The class 13 scraping tool was recorded on a fragment from a large thin patterned biface of plate chalcedony, a technological form that is ordinarily used for patterned bifacial cutting tools. Finally, one of the expedient general purpose cutting tools is made of granite and another is made of Pierre Shale. These chipped stone tool forms are ordinarily made of lithic types with better flaking properties and harder, sharper edges.

Another unusual aspect of the assemblage is the complete absence of patterned bifacial cutting tools and the nearly complete absence of unpatterned flake tools. Unpatterned flake tools were used in a variety of cutting, slicing, sawing, and scraping tasks, and they are typically the most numerous kind of stone tool found in village assemblages. The apparent lack of these types of cutting tools in the Ghost Lodge sample may indicate that these traditional implements had been replaced to a considerable extent by metal tools obtained through the operation of the early fur trade (cf. Lehmer 1971; Toom 1979, 1989c:597).

Chipped Stone Flaking Debris

A total of 98 pieces of G2-4 chipped stone flaking debris was found in the test excavations at Ghost Lodge. All of the flaking debris is assigned to the Post-Contact Coalescent component. The overwhelming majority comes from the House 2 test units, especially from the hearth (F101) in Test 3. A water screen sample from the hearth produced all of the G4 flakes. Two other water screen samples taken from the rooffall/floor zone of House 2 in Tests 3 and 5 did not yield any G4 flakes. Only one G3 flake was recovered from an extramural context (Test 7) (Table 73).

The general flaking debris sample is too small and biased for a precise assessment of chipped stone tool technological operations performed at the site on the basis of size grade data. However, the sample from F101, which includes projected amounts of G4 flaking debris, is amenable to a limited and cautious mass analysis approach. Mass analysis of flaking debris is discussed in greater detail in the Antelope Dreamer site report. A G4/G1-3 flaking debris ratio of 4.36:1 is calculated for the F101 sample based on the data in Table 73. This figure is arrived at by dividing the projected number of G4 flakes (n=96) by the total number of G1-3 flakes (n=22). A ratio of 4.36:1 is close to the upper value of the range of G4/G1-3 ratios of 1.63:1 to 4.03:1 that were produced experimentally by core reduction and heavy percussion flaking of large bifaces of Knife River flint (Ahler and Christensen 1983:372-378). These limited data suggest that gross (crude) stone tool technological operations were performed in House 2, consisting mainly of heavy percussion flaking of relatively large tools. Such an interpretation is consistent with the apparently degenerative form of chipped stone tool technology that is inferred for the Post-Contact component.

Table 73. Chipped Stone Flaking Debris Size Grade Data by Test Unit and Context, Post-Contact Coalescent Component, Ghost Lodge (39ST120).

Context/ Test Unit		Size Grade: Grade 1	Grade 2	Grade 3	Grade 4	Total	Projected Grade 4*
Extramural Tests							
1	n	-	-	-	na	-	na
	%	-	-	-	na	-	na
2	n	-	-	-	na	-	na
	%	-	-	-	na	-	na
7	n	-	-	1	na	1	na
	%	-	-	100.0	na	100.0	na
8	n	-	-	-	na	-	na
	%	-	-	-	na	-	na
Sub-total	n	-	-	1	na	1	na
	%	-	-	100.0	na	100.0	na
House 2 Tests							
3	n	-	-	2	-	2	-
	%	-	-	100.0	-	100.0	-
4	n	-	-	12	na	12	na
	%	-	-	100.0	na	100.0	na
5	n	-	1	9	-	10	-
	%	-	10.0	90.0	-	100.0	-
6	n	-	1	2	na	3	na
	%	-	33.3	66.7	na	100.0	na
3-F101	n	-	1	21	48	70	96
	%	-	1.4	30.0	68.6	100.0	81.4
Sub-total	n	-	3	46	48	97	na
	%	-	3.1	47.4	49.5	100.0	na
Total	n	-	3	47	48	98	na
	%	-	3.1	48.0	49.0	100.1	na

*Projected numbers of grade 4 flaking debris are based on actual numbers in water screen sample fractions; multiplier of 2 for the F101 sample (50%).

Flaking debris lithic raw material type data are presented in Table 74. The range of raw materials in the flaking debris sample is somewhat different from that exhibited by the chipped stone tools. Local raw materials constitute 49.0% of the sample as opposed to 32.6% nonlocal materials. The balance of the flaking debris consists of burnt chalcedony (18.4%) from the miscellaneous resource group. The sample is too small to establish a definite pattern of lithic resource utilization for the Post-Contact Coalescent component. The discrepancies between the lithic types represented in the stone tool sample and those in the flaking debris sample seem to suggest a somewhat haphazard use of lithic resources, which may be another indication of a deteriorating lithic technology.

Fire-Cracked Rock

A total of 700 g of G1-3 fire-cracked rock (FCR) was obtained from the test excavations at Ghost Lodge (Table 75). All of the FCR was recovered from the House 2 test units. The 574 g recovered from Test 3 is all from the hearth (F101). The majority of the FCR is granitic.

Other Artifacts

Other artifacts collected from the test excavations at Ghost Lodge include small quantities of natural clinker, burned earth, charcoal, and, of particular interest, five small pieces of trade metal. Virtually all of this material was recovered from the House 2 test units (Table 76). The natural clinker consists of two small G3 pieces; it is probably debris from the manufacture of clinker abrading tools. The burned earth consists of G2-3 sized specimens that were all found in Test 3 in association with the hearth (F101), excepting 2 g that were recovered from an extramural context in Test 7. A mere 15 g of G3 (or smaller) wood charcoal from both intramural and extramural contexts is retained in the site collection. This excludes two 12.5 g charcoal samples taken from F101 that were submitted for radiocarbon dating. A large charcoal fragment taken from the hearth was also submitted for species identification; it is identified as ash (*Fraxinus*) (see Appendix A; Van Ness, this report).

The five trade metal specimens are small (G3) amorphous pieces of corroded iron. All appear to be fragments of sheet metal that were probably cut from an iron kettle. Metal kettles obtained through trade by the post-contact Villagers were usually cut up and remanufactured into more desirable metal tools and ornaments. This practice is amply documented in the historic literature of the study region (cf. Toom 1979). The trade metal specimens from Ghost Lodge were all recovered from House 2, and they are unquestionably associated with the Post-Contact Coalescent component. Two were found in the hearth in Test 3, and the other three were found directly atop the floor of the house in Test 4.

Table 74. Chipped Stone Flaking Debris Raw Material Type Data by Size Grade, Post-Contact Coalescent Component, Ghost Lodge Site (39ST120).

Resource Group/ Raw Material Type		Size Grade: Grade 1	Grade 2	Grade 3	Grade 4	Total: n	%
Local Resource Group							
04 Solid Quartzite		-	-	1	-	1	1.0
06 Jasper/Chert		-	1	10	18	29	29.6
08/09/10 Various Chalcedonies		-	-	7	1	8	8.2
37 Pierre Shale		-	2	8	-	10	10.2
Subtotal, Local		-	3	26	19	48	49.0
Northern Resource Group							
28 Knife River Flint		-	-	1	-	1	1.0
Western Resource Group							
07 Flattop Chalcedony		-	-	-	1	1	1.0
11 Plate Chalcedony		-	-	11	19	30	30.6
Subtotal, Nonlocal		-	-	12	20	32	32.6
Misc. Resource Group							
12 Burnt Chalcedony		-	-	9	9	18	18.4
Total	n	-	3	47	48	98	100.0
	%	-	3.1	48.0	49.0	100.1	

Table 75. Fire-Cracked Rock Size Grade Data by Test Unit and Context, Post-Contact Coalescent Component, Ghost Lodge Site (39ST120).

Context/ Test Unit		Size Grade (grams) Grade 1	Grade 2	Grade 3	Total
Extramural Tests					
1	wt	-	-	-	-
	%	-	-	-	-
2	wt	-	-	-	-
	%	-	-	-	-
7	wt	-	-	-	-
	%	-	-	-	-
8	wt	-	-	-	-
	%	-	-	-	-
Subtotal, Extramural	wt	-	-	-	-
	%	-	-	-	-
House 2 Tests					
3*	wt	514	26	7	547
	%	94.0	4.7	1.3	100.0
4	wt	-	20	1	21
	%	-	95.2	4.8	100.0
5	wt	132	-	-	132
	%	100.0	-	-	100.0
6	wt	-	-	-	-
	%	-	-	-	-
Subtotal, House 2	wt	646	46	8	700
	%	92.3	6.6	1.1	100.0
Total	wt	646	46	8	700
	%	92.3	6.6	1.1	100.0

*All FCR in Test 3 is from F101.

Table 76. Data on Other Artifacts by Test Unit and Context, Post-Contact Coalescent Component, Ghost Lodge Site (39ST120).

Context/ Test Unit		Natural Clinker	Trade Metal		Burned Earth/ Fired Clay (g)	Charcoal/ Wood (g)
<u>Extramural Tests</u>						
1	n	-	-	wt	-	-
2	n	-	-	wt	-	-
7	n	-	-	wt	2	5
8	n	-	-	wt	-	1
Subtotal	n	-	-	wt	2	6
<u>House 2 Tests</u>						
3	n	1	2	wt	131	5
4	n	-	3	wt	-	-
5	n	-	-	wt	1	2
6	n	1	-	wt	-	2
Subtotal	n	2	5	wt	132	9
Total	n	2	5	wt	134	15

Vertebrate Fauna

Vertebrate fauna remains recovered from the test excavations at Ghost Lodge total 319 g of G1-3 unmodified bone debris. Of this amount, a mere 25 g was found in the lower levels of Test 8 in association with the base of the Abk horizon. This 25 g of bone, which consists of 13 g of G1, 6 g of G2, and 5 g of G3 debris, is attributed to the unknown prehistoric component. None of the unknown component bone shows any definite signs of modification (tool use) or butchering, but 1 g of G3 bone does exhibit evidence of burning. This small quantity of bone debris represents the only potential artifactual material that is attributable to this possible component. None of the bone from the unknown prehistoric component is considered to be identifiable.

The remaining 294 g of G1-3 bone debris in the site sample were found in Post-Contact Coalescent contexts, with the majority recovered from the House 2 test units, particularly Test 3 and F101 (Table 77). Seventy-three grams (24.8%) of Post-Contact Coalescent bone shows evidence of burning. As might be expected, most of the burned bone was found in the hearth (F101) in Test 3. The Post-Contact Coalescent bone debris sample contains some potentially identifiable G1-3 and G4-5 specimens. All of the potentially identifiable specimens are from House 2. The G4-5 specimens were picked from the F101 water screen sample.

The identified and modified bone from the site is considered in detail in Appendix B (Wheeler, this report). Only the general characteristics of the bone aggregate from the site are discussed here. The bulk of the sample consists of fragmented bone debris from large mammals. Most identified large mammal bones are bison, but a pronghorn element is also present in the collection. Other remains included unspecified rodent and lizard. No definite bone tools are present in the site collection, but a fragment from a pronghorn(?) metacarpal does show some possible indications of modification beyond simple butchering.

Macrobotanical Remains

The only identifiable macrobotanical specimen from the Ghost Lodge site consists of the large wood charcoal fragment collected from the central hearth (F101) of House 2. The specimen undoubtedly represents fuel that was burned in the hearth. It is identified as ash (*Fraxinus*). A flotation sample taken from F101 was also submitted for analysis. It contained only one unidentifiable charred seed fragment (Appendix A; Van Ness, this report).

Artifact Distributions and Densities

Data on the distribution and density of major Post-Contact Coalescent artifact classes at Ghost Lodge are contained in Table 78. Quantities of artifacts are stated according to number (n) or weight (wt) per m^2 of excavated area for each test unit and archeological context, as well as for the site as a whole. Artifact densities for all major classes of material are highest in House 2. The only extramural test that produced any appreciable quantities of artifacts is Test 7, which was located in the immediate vicinity of the house depressions. The limited testing conducted at the site indicates that most artifactual remains are to be found in and around the house depressions in the eastern area of the site (the eastern bench). The western site area (the western bench) does not appear to contain significant quantities of artifacts, either Post-Contact Coalescent or unknown prehistoric. However, more extensive testing in the western bench could contradict this assessment.

The generally low artifact densities for the Post-Contact component demonstrate that the village was occupied for only a brief time, and that this occupation was of low intensity. Unmodified bone debris densities are particularly low, making a semipermanent hunting camp interpretation like that

Table 77. Unmodified Bone Size Grade Data by Test Unit and Context, Post-Contact Coalescent Component, Ghost Lodge Site (39ST120).

Context/ Test Unit		All Bone (grams)				Burned Bone (grams)			
		G1	G2	G3	Total	G1	G2	G3	Total
Extramural Tests									
1	wt	-	-	-	-	-	-	-	-
	*%	-	-	-	-	-	-	-	-
2	wt	-	-	3	3	-	-	-	-
	%	-	-	100.0	100.0	-	-	-	-
7	wt	-	25	23	48	-	-	1	1
	%	-	52.1	47.9	100.0	-	-	4.4	2.1
8	wt	-	-	4	4	-	-	1	1
	%	-	-	100.0	100.0	-	-	25.0	25.0
Subtotal	wt	-	25	30	55	-	-	2	2
	%	-	45.5	54.5	100.0	-	-	6.7	3.6
House 2 Tests									
3	wt	65	30	55	150	10	9	45	64
	%	43.3	20.0	36.7	100.0	15.4	30.0	81.8	42.7
4	wt	-	-	5	5	-	-	2	2
	%	-	-	100.0	100.0	-	-	40.0	40.0
5	wt	-	13	12	25	-	-	4	4
	%	-	52.0	48.0	100.0	-	-	33.3	16.0
6	wt	34	13	12	59	-	-	1	1
	%	57.6	22.0	20.3	99.9	-	-	8.3	1.7
Subtotal	wt	99	56	84	239	10	9	52	71
	%	41.4	23.4	35.2	100.0	10.1	16.1	61.9	29.7
Total	wt	99	81	114	294	10	9	54	73
	%	33.7	27.5	38.8	100.0	10.1	11.1	47.4	24.8

*Burned bone percentages are stated as a product of the quantities of "all bone."

Table 78. Major Artifact Class Distribution and Density Data by Test Unit and Context, Post-Contact Coalescent Component, Ghost Lodge Site (39ST120)

Context/ Test Unit	Rim Sherds	Body Sherds	Stone Tools	Flaking Debris*	FCR (g)	Unmodified Bone (g)
Extramural Tests						
1	-	-	-	-	-	-
2	-	5	-	-	-	3
7	1	37	-	1	-	48
8	-	1	-	-	-	4
Subtotal	1	43	-	1	-	55
n/wt/m^2	0.3	10.8	-	0.3	-	13.8
House 2 Tests						
3	10	144	6	24	547	150
4	2	79	1	12	21	5
5	1	40	1	10	132	25
6	-	17	2	3	-	59
Subtotal	13	280	10	49	700	239
n/wt/m^2	3.3	70.0	2.5	12.3	175.0	59.8
Total	14	323	10	50	700	294
n/wt/m^2	1.8	40.4	1.3	6.3	87.5	36.8

*Includes size grade 1-3 flaking debris only.

at Fire Heart Creek untenable. General bone debris density data are not available for the Post-Contact component at Fire Heart Creek, but Lehmer (1966:51) does indicate that copious amounts of bone were associated with this component. Density data for identifiable bone elements are available for the Fire Heart Creek site, however. The Post-Contact component yielded a mean value of 1.3 identifiable specimens per cubic meter of excavated volume at Fire Heart Creek (Lehmer 1966:71). The village component at Ghost Lodge produced only 0.6 identifiable specimens per cubic meter of excavated volume in the eastern bench (i.e., excluding Test 8), which is considerably lower than the Fire Heart Creek value.

Discussion and Conclusions

The village component at Ghost Lodge seems to defy a conventional interpretation because the results of the test excavations reported have raised more questions than answers. We do know that this component represents a short-term occupation by a relatively small group of Post-Contact Coalescent villagers affiliated with the Bad River phase. The protohistoric Bad River phase is directly linked to the historically known Arikara tribe (Hoffman and Brown 1967; Lehmer 1971; Lehmer and Jones 1968), so the occupants of the village component at Ghost Lodge were in all probability members of an Arikara band. Radiocarbon dates, comparative artifactual analyses, and other temporal-cultural information indicate a date of occupation during the late A.D. 1700s, possibly during or immediately following the A.D. 1780-1781 smallpox epidemic.

A standard interpretation of the data suggests that the village component functioned as a semipermanent Arikara field camp. The houses at the site are definitely not like the large, substantial earthlodges that are typically found at permanent Arikara village sites. Rather, the dwellings at Ghost Lodge appear to be small, semipermanent structures similar to the conical earthlodges or hunting lodges reported at the Fire Heart Creek site, which is interpreted as an Arikara hunting camp (Lehmer 1966). This architectural association immediately suggests that the Ghost Lodge village functioned as a semipermanent hunting camp or, in the terminology used here, a field camp. However, the low density of bone debris at the site does not support a hunting camp interpretation.

Nevertheless, the village probably did function as some sort of temporary residential base for a small group of Arikara. One can only speculate as to why such an occupation was established at this location. The estimated date of occupation encompasses the well documented smallpox epidemic of A.D. 1780-1781, which had a particularly disastrous impact on the Post-Contact Coalescent villagers, including the Arikara of the Big Bend region (cf. Deetz 1965; Lehmer 1971; Meyer 1977; Wedel 1961). The severe inroads of this epidemic on the Arikara population base forced the survivors to abandon the Big Bend region and withdraw up river to the Bad-Cheyenne region where they established two villages with other surviving Arikara near the mouth of the Cheyenne River (Krause 1972:14). It is entirely possible that the temporary village at Ghost Lodge was occupied by remnants of the Big Bend Arikara just prior to their removal upriver, since the available data do not appear to support an occupation by a special-purpose task group. The degenerative form of chipped stone tool technology that is inferred for the component, as well

as the overall poor quality of the ceramic remains, would seem to lend further credence to a post-epidemic occupation.

Another intriguing aspect of the village component at Ghost Lodge is its potential relationship to the nearby Bloody Hand site (39ST230), a probable Post-Contact Coalescent village occupation located approximately 1 km upstream from the Ghost Lodge site (Steinacher 1981; Steinacher and Toom 1985; Toom and Picha 1984). The Bloody Hand site represents a permanent residential base (a permanent earthlodge village), but seemingly low artifact densities suggest that this village, too, was occupied only briefly. It is possible that a small band of Arikara established a temporary settlement at the Ghost Lodge site in order to be near the larger Arikara village at Bloody Hand for purposes of mutual support and protection before moving in mass upriver to the Cheyenne River area. However, it is presently not possible to demonstrate a definite link between the two sites, nor is it possible to do more than speculate on the roll that these sites may have played in the abandonment of the Big Bend region by the Arikara sometime after A.D. 1780. Additional research along these lines could be productively pursued at both the Ghost Lodge and Bloody Hand sites.

Scant evidence of an unknown prehistoric component at the Ghost Lodge site was found only in the western bench in association with the base of a prominent buried A horizon. On the basis of the single test unit that was excavated in the western part of the site, it would appear that very little of this component remains intact, and what does remain seems to be exceedingly ephemeral. Based on stratigraphic correlation with the late Plains Woodland component identified at the nearby Sitting Buzzard site (39ST122) (Section XII, this report), and the Sonota component at the Lost Nation Site (39LM161) (Toom 1989b), it is likely that the unknown prehistoric component at Ghost Lodge is also of the Plains Woodland period.

XI. CACHE SITE (39ST121)

Site Description and Background

The Cache site consisted of two potential buried cultural horizons, at least one of which contained definite prehistoric artifacts, exposed in the cutbank of a small, low-lying flat adjacent to Lake Sharpe (Figures 99 and 100). A small amount of bone was also noted eroding from the upper slope of a small knoll some distance back from the cutbank (Toom and Picha 1984). The flat is at an elevation of about 1430 ft amsl; the knoll is somewhat higher, reaching an elevation of about 1450 ft amsl. The site is located in the lower margins of the Missouri Breaks zone and is surrounded by higher, heavily dissected and eroded Pierre Shale terrain on all sides except the side open to the lake. It is herein named for a lithic cache found exposed in the cutbank and eroding from the uppermost cultural horizon. The cutbank is very unstable and rapidly eroding due primarily to wave action from Lake Sharpe. Recent gully cutting in the flat has contributed to its overall destabilization and erosion.

Figure 99. General Photo of the Cache Site (39ST121). Site area from the southwest, northeast view (photo no. 3011, WCRM 1987). The small flat next to the lakeshore is on the left; the small knoll is on the right marked by the transit over the site datum near Test 1.

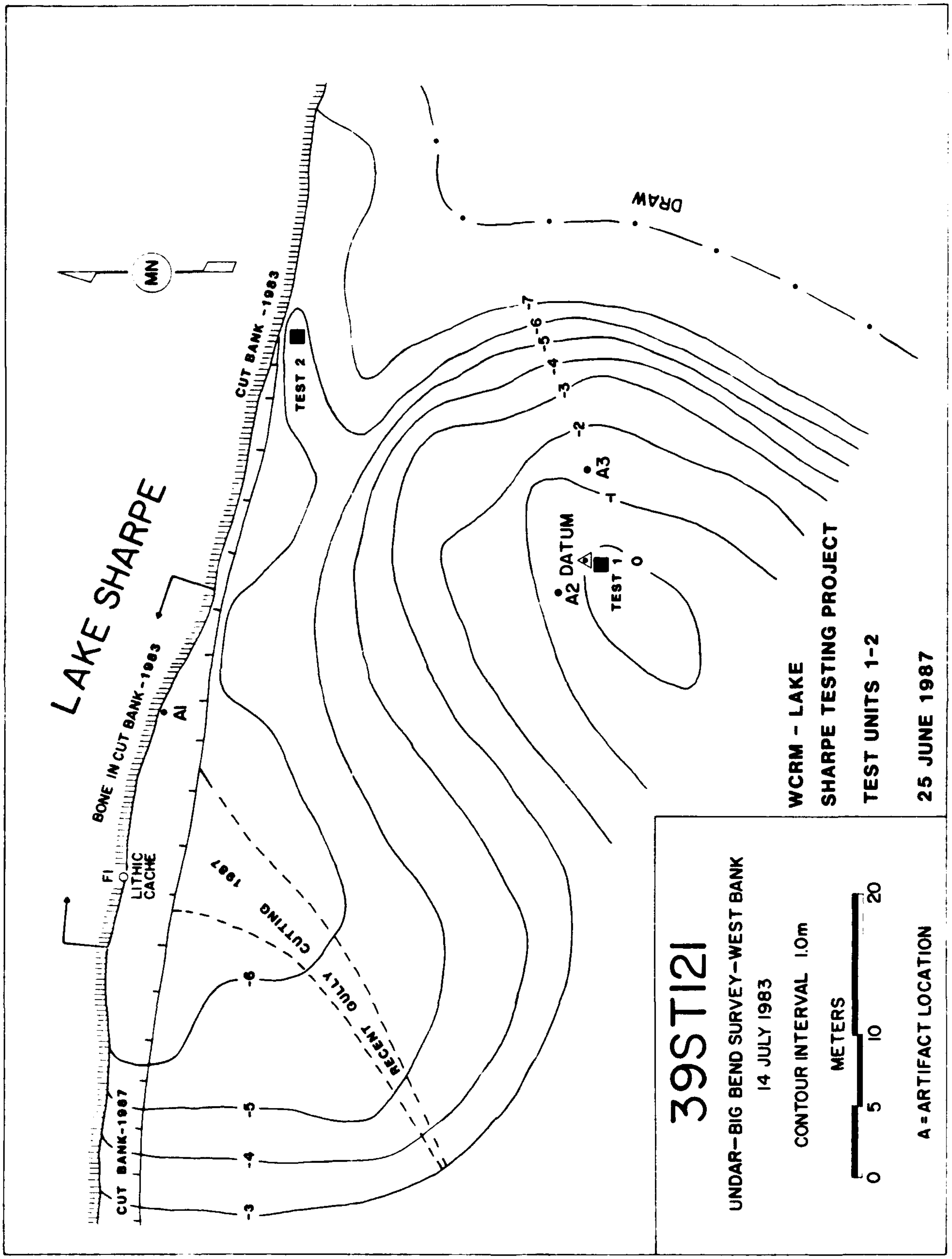


Figure 100. Contour Map of the Cache Site (39ST121).

Previous Archeological Research

The Cache site was discovered and recorded in 1983 by a survey team from the University of North Dakota (UND) under the direction of T. L. Steinacher (Toom and Picha 1984). This work was performed by UND as part of a contractual agreement with the U.S. Army Corps of Engineers (USACE), Omaha District, to conduct an archeological survey of selected federal lands along the west bank of the Lake Sharpe project area (D. L. Toom, principal investigator; S. A. Ahler, co-principal investigator). Work at the site by UND included mapping and the removal of the lithic cache exposed in the cutbank. The remaining portion of the cache was excavated by UND because it was in imminent danger of complete loss from further erosion.

In general, the Lake Sharpe cutbank exposure at the site was described by UND investigators as containing several strata or zones of silty soil. Occasional bands of "clayey shale" were also present in the lower portion of the profile (Figure 101). The lithic cache, designated Feature 1, was associated with the base of "a light brown silt" (soil zone D) found at about 90 cm surface depth (sd). The remaining portion of the cache contained a number of chipped stone flake blanks. The lower cultural horizon, which contained only fragmented bone, was recorded as a "brown clayey silt" (soil zone H) at about 140 cm sd. Bone fragments observed in the lower horizon were limited to an area of the face of the cutbank that was no more than 25 m wide. No definite explanation could be offered for the presence of an apparently isolated lithic cache at this location. It was speculated that some individual or group hid the lithic material in a secluded spot hoping to recover it later. The site was recommended by UND researchers for National Register testing and evaluation.

Analysis of the contents of the cache by UND investigators revealed 55 complete flakes and a few broken specimens, two of which could be pieced together. After matching, 52 complete flakes and two flake fragments remained, totaling 54 individual specimens. It was uncertain if the cache was contained in a small subsurface pit because of the desiccated and eroded condition of the cutbank. Containment in a small pit seems very likely because the flakes were found in a tightly clustered group, and other caches found in the Lake Sharpe area, such as those recovered from the Whistling Elk site (39HU242) (Steinacher 1984; Toom 1984c), were found in small pits. However, the lithic caches from Whistling Elk, an earthlodge village site, were located beneath house floors. Whatever the case here, the contents of the cache proved to be quite interesting from the perspective of lithic technology.

Microscopic examination of the flakes under low-power magnification did not reveal any traces of use wear. Feathered edges resulting from flake production and some random edge damage caused by transportation and storage were observed, however. No recognizable finished tool forms are present in the sample, indicating the flakes were at the preform stage of manufacture (cf. Crabtree 1972). All appear to be flake blanks of variable morphology. Three basic flake morphologies are represented: (1) large, thick, blocky flakes; (2) long, thin, blade-like flakes; and (3) miscellaneous expanding flakes of various shapes and sizes. The wide range of variability exhibited by the specimens indicates the cache was multipurpose and intended for the manufacture of a number of different types of tools, including large and small flake tool and bifacial tool forms. All of the flake blanks appear to have

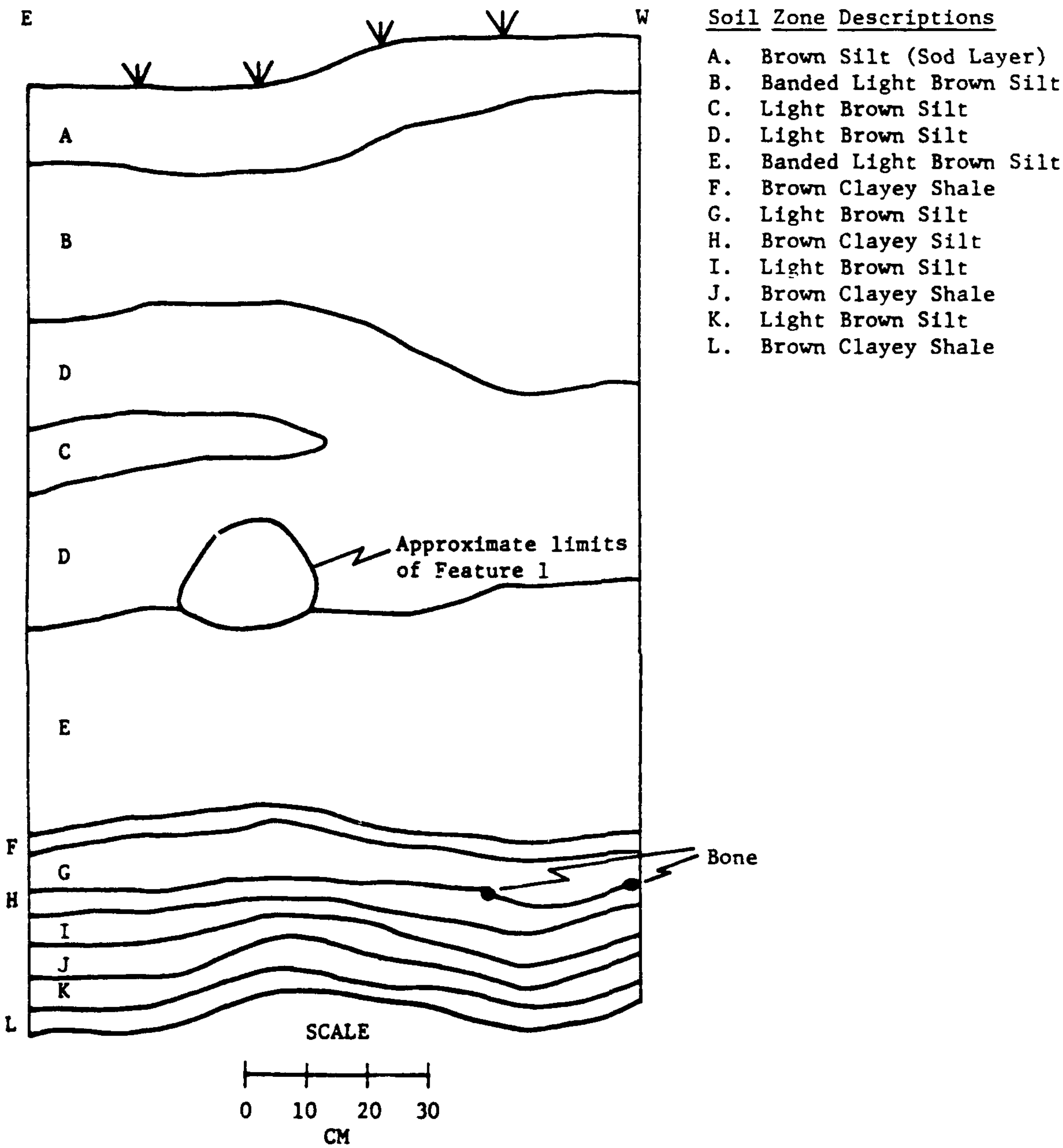


Figure 101. Cutbank Profile at Feature 1, UND 1983, Cache Site (39ST121) (from Picha and Toom 1984).

been produced from freehand cores (nonbipolar cores) by hard hammer percussion core reduction techniques. Most are of secondary origin from a core interior; only a few primary flakes exhibiting cortex are present. Attempts at core reconstruction proved to be largely unsuccessful and it would appear that multiple cores are represented (Toom and Picha 1984:148-154).

Only two recognized types of lithic raw materials were identified in the cache (Toom and Picha 1984:148). The overwhelming majority of the specimens (n=49, 91%) are made of a purple to purple-pink variety of Flattop chalcedony. This lithic type is described in detail in Ahler (1977a). Flattop chalcedony is not locally available in the Lake Sharpe area (Ahler 1989a; Toom 1984a). It is identified in this report as a component of the western resource group (Appendix N), with primary sources located more than 100 km to the southwest of Lake Sharpe in southwestern South Dakota, northeastern Colorado, and northwestern Nebraska. The nearest sources to the Lake Sharpe area would be those along the White River drainage in the Big Badlands area of southwestern South Dakota. The remaining five specimens in the cache were identified as Chadron chert (cf. Ahler 1977a). This material is locally available in the Lake Sharpe area (Ahler 1989a; Toom 1984a), although these specimens may have been collected in conjunction with Flattop chalcedony in the White River drainage where primary deposits of Chadron chert are located. Chadron chert is included under the generic lithic type jasper/chert in the present report (Appendix N).

UND researchers concluded that the high percentage of Flattop chalcedony suggests that the cache is probably attributable to a Plains Village, Coalescent tradition group of some unidentified variant on the basis of known lithic resource utilization patterns in the Middle Missouri subarea (Ahler 1977a; Johnson 1984a; Toom 1984a). An Initial Coalescent variant affiliation was specifically suggested considering the relatively deep burial of the cache, but burial depth could be a meaningless temporal indicator in such an active geomorphic setting. Other, more certain evidence of age and cultural affiliation is lacking, so the cache is probably best viewed as unknown prehistoric.

Present Investigations

It is the intent of these investigations to test and evaluate the site as a potential National Register property. Determining the cultural affiliation, extent, and condition of the cultural deposits at the site are of primary concern.

Fieldwork

An inspection of the Lake Sharpe cutbank at the Cache site prior to testing revealed that the stratigraphic sequence containing the potential cultural horizons recorded by UND is no longer in existence. A comparison of photographs of the cutbank exposure in 1983 (UND) and 1987 (WCRM) clearly shows that the area identified by UND, including the location of Feature 1, has been completely destroyed by recent gully cutting in the flat accompanied by lateral cutbank erosion (Figure 102). The Lake Sharpe cutbank was also remapped as part of these investigations, indicating that anywhere from 3-4

A

B

Figure 102. Cutbank Photos of the Vicinity of Feature 1 in 1983 and 1987, Cache Site (39ST121). A: Cutbank in 1983 with UND crew, south view (photo no. 2546A, UND 1983). B: Cutbank in 1987, south-southwest view (photo no. 3015, WCRM 1987).

meters of the cutbank has been lost to erosion in the four years since the discovery of the site and the investigations reported here (Figure 99). No evidence of extensive exposures of silty soils and buried cultural horizons was observed in the present cutbank. Rather, one now sees a cutbank exposure consisting principally of clayey colluvium overlying Pierre Shale bedrock. An inspection of the surface of the site did not reveal any definite artifactual remains, but a few pieces of bone were observed eroding from the upper slope of the knoll in the vicinity of Test 1 (Figure 99).

Testing at the site consisted of the excavation of two 1 X 1 m test units. Test 1 was placed on the small knoll located approximately 25 m to the south of the present Lake Sharpe cutbank where the UND survey team reported eroding bone (Figure 99). Test 2 was located near the edge of the cutbank in an intact portion of the low-lying flat. Testing opposite the former location of the buried horizons reported by UND was not feasible because of the recent gully cutting in this part of the site. Test 1 was excavated to a depth of 70 cm into a clayey subsoil. Test 2 was excavated to a depth of 40 cm where a similar soil was encountered. Excavation proceeded according to 10 cm arbitrary levels. All sediment matrix removed from the tests was dry screened through one-quarter inch hardware cloth screens. No water screen samples were taken. Excavated volume at the site totals 1.1 m^3.

Geomorphic Context and Stratigraphy

The geomorphic setting of the site is complex, active, and difficult to interpret. The lower portion of the site adjacent to the Lake Sharpe shoreline appears to consist of a narrow drainageway that has been filled with clayey colluvium derived from the higher Breaks terrain. This old colluvium-filled channel now comprises a small flat that is graded to the approximate level of the MT-1. The MT-1 terrace is present on the north side of the river opposite the site (cf. Coogan 1980). The blockage of previously established drainageways by mass movements from a high Pierre Shale hill to the southwest of the site seems to have been an important factor in the filling of the channel and the formation of the flat. An intermittent stream located along the eastern side of the site now serves the primary local drainage channel. The recent gully cutting in the flat would seem to indicate that the old drainageway is undergoing rejuvenation. This gully cutting is located directly opposite that portion of the flat where UND recorded the buried cultural horizons and silty soils in the Lake Sharpe cutbank (Figure 99). Rejuvenation of the old drainageway is unquestionably a significant factor contributing to the destabilization and erosion of the Lake Sharpe shoreline at this location.

The knoll in the southern part of the site is a small, flattopped Pierre Shale hill or erosional remnant that is capped by loess (silt loam). The knoll has been graded to the approximate level of the MT-2 terrace which is also present on the north side of the river opposite the site (cf. Coogan 1980).

Profile Descriptions, Sediments, and Soils

The upper profiles of the two test units excavated at the site exhibit distinctly different stratigraphic sequences, even though the horizon nomenclature used for both tests is identical. This reflects their location in two separate geomorphic contexts with different depositional environments and somewhat different soil parent materials. Test 1, located on the small knoll, exhibits a loess depositional unit overlying clayey Pierre Shale residuum. Test 2 was placed in the surface of the flat where the two primary depositional units consist of clayey colluvium over clayey residuum, both of which are derived from Pierre Shale bedrock.

Test Unit 1. The upper portion of Test 1 contains A and Bw horizons consisting of silt loam (SiL) formed in the loess cap. Beneath the loess at a depth of about 60 cm is a clay recorded as a 2Bbk horizon (Figures 103 and 104A). Small fragments of Pierre Shale are common in the 2Bbk, and it is probably formed in Pierre Shale residuum. Pierre Shale bedrock (2Cr/2R horizons) is almost certainly to be found at no great depth beneath the 2Bbk. A thin 2Cox horizon is also likely present between the 2Bbk and the surface of the bedrock.

Test Unit 2. The A and Bw horizons in Test 2 consist of a silty clay loam (SiCL) formed in what is interpreted as clayey colluvium. Beneath the Bw, at a depth of about 16 cm, is a clay identified as a 2Bbk horizon (Figures 104B and 105). Small fragments of Pierre Shale are common in the 2Bbk, and this horizon is probably formed in clayey Pierre Shale residuum, rather than colluvium. Therefore, the 2Bbk in Test 2 is generally correlatable with the 2Bbk in Test 1. As in Test 1, Pierre Shale bedrock is almost certainly present at no great depth beneath the 2Bbk, and a thin 2Cox horizon is probably situated between the 2Bbk and the bedrock.

Cultural Associations

Other than a single .22-caliber cartridge case found in the upper 10 cm of Test 1, no definite artifactual remains were recovered from either of the two test units excavated at the site. Small quantities of unmodified bone were found from 50-70 cm sd in Test 1 and from 0-30 cm sd in Test 2, but these are thought to be the product of natural (noncultural) processes. The majority of the bone from both test units is associated with the surface of the 2Bbk horizon recorded in each.

Archeological Components, Radiocarbon Dates, and Analytic Units

Evidence of only one extant archeological component was uncovered by the fieldwork at the Cache site. Designated as recent (historic) Euroamerican, this component reflects sporadic, contemporary use of the site locale for purposes of recreation, primarily hunting. This exceedingly ephemeral component is of no archeological significance. Radiocarbon dating is

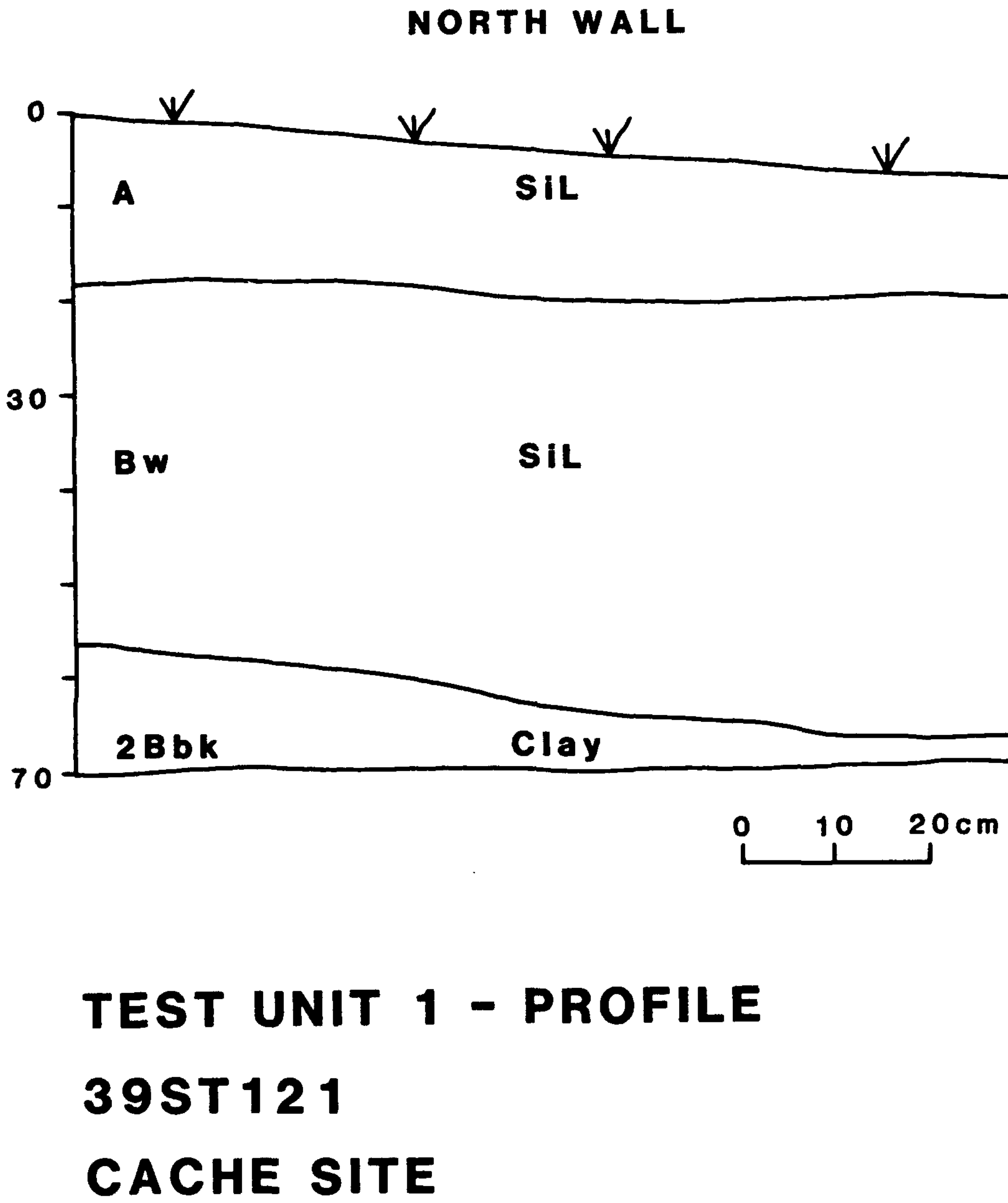
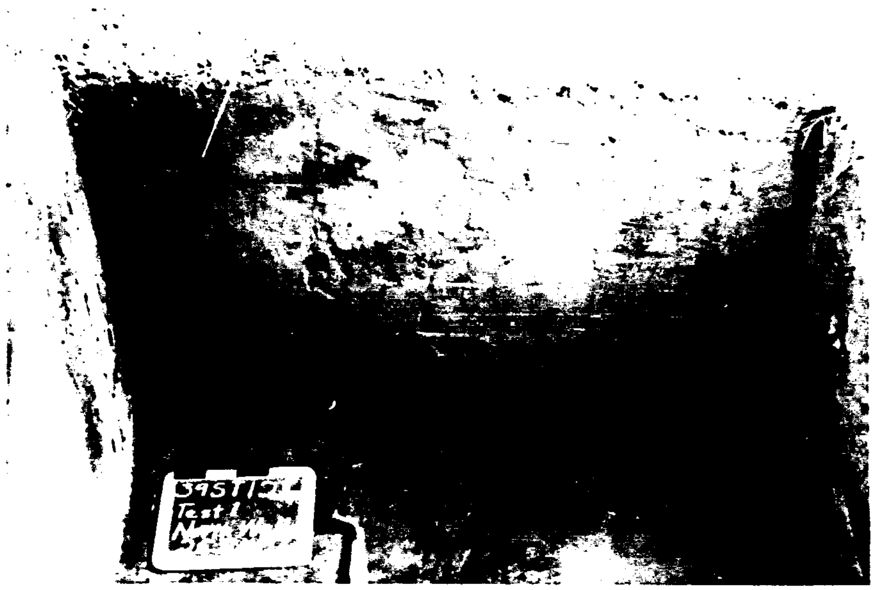


Figure 103. Profile Drawing of Test 1, Cache Site (39ST121).



A

B

Figure 104. Profile Photos of Tests 1 and 2, Cache Site (39ST121).
A: North wall of Test 1 (photo no. 3008, WCRM 1987).
B: North wall of Test 2 (photo no. 3007, WCRM 1987).

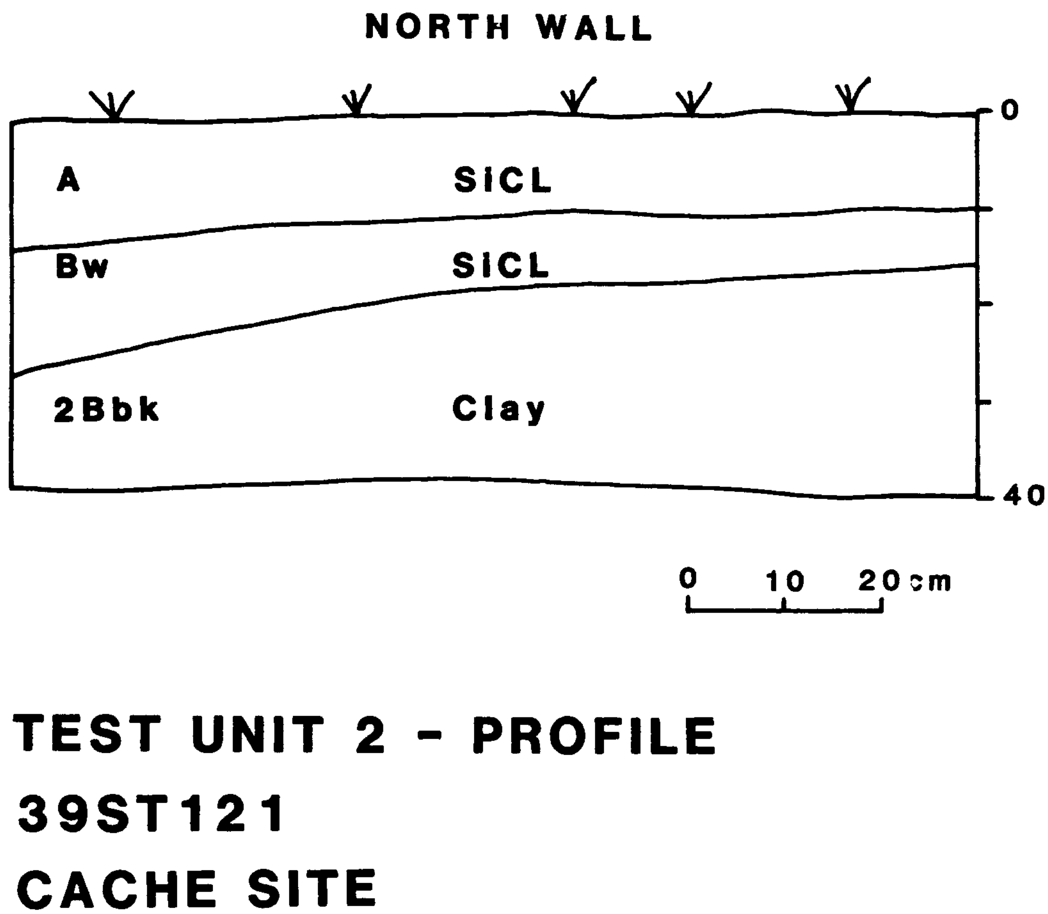


Figure 105. Profile Drawing of Test 2, Cache Site (39ST121).

irrelevant to the investigations conducted at the site. The limited remains recovered by test excavation at the site are considered according to test unit.

Recent Euroamerican Artifacts

This class of material consists of a single .22-caliber long cartridge case found on the small knoll in the upper 10 cm of Test 1. This rim-fire specimen has the headstamp "U" and "HI SPEED", indicating recent manufacture by the Union Metallic Cartridge Company.

Vertebrate Fauna

A total of 53 g of G1-3 unmodified bone debris was recovered from the test excavations at the Cache site (Table 79). None of the bone shows signs of burning. The majority was recovered from 60-70 cm sd in Test 1. Most of the bone from Test 2 was found from 10-20 cm sd. A few G1-3 specimens from Test 1 are potentially identifiable. The bone exhibits no obvious evidence of butchering or modification and it is interpreted as naturally deposited material.

The identified bone in the site sample is considered in detail in Appendix B (Wheeler, this report). It consists entirely of a large canid (coyote) mandible with teeth and fragments thereof that were recovered from Test 1.

Table 79. Unmodified Bone Size Grade Data by Test Unit, Cache Site (39ST121).

Test Unit		All Bone (grams)				Burned Bone (grams)			
		G1	G2	G3	Total	G1	G2	G3	Total
1	wt	26	2	6	34	-	-	-	-
	*%	76.5	5.9	17.6	100.0	-	-	-	-
2	wt	-	7	12	19	-	-	-	-
	%	-	36.8	63.2	100.0	-	-	-	-
Total	wt	26	9	18	53	-	-	-	-
	%	49.1	17.0	34.0	100.1	-	-	-	-

*Burned bone percentages are stated as a product of the quantities of "all bone."

Discussion and Conclusions

The investigations at the Cache site leave little doubt that the cultural deposits that were once present here, both real and potential, have been completed destroyed by erosion. This erosion consists of recent gully cutting in the flat directly opposite the recorded location of the artifactual materials, as well as lateral cutbank erosion by wave action from Lake Sharpe. The gully cutting has clearly exacerbated the pace of cutbank erosion at the site. The interesting aspect of the erosion processes at the site is the formation of rather deep gully in the flat in as little as four years since the site was first recorded and later scheduled for testing. The formation of this gully is thought to reflect the rejuvenation of an old colluvium-filled drainageway.

XII. SITTING BUZZARD SITE (39ST122)

Site Description and Background

The setting of the Sitting Buzzard site (39ST122) is similar in many respects to that of the Ghost Lodge site (39ST120), located less than 5 km downstream from Sitting Buzzard (Figure 1). The site is situated adjacent to Lake Sharpe in a small bench or terrace remnant on the west side of an intermittent stream course in the midst of low-lying Missouri Breaks terrain (Figures 106 and 107). As at Ghost Lodge, a bench is also present along the eastern side of the stream channel, but no artifactual remains were observed in exposures of the eastern bench. The site contains a Plains Village component consisting of a broad scattering of artifactual debris and a possible earthlodge depression. A prominent buried soil horizon with scattered, fragmented bone was found exposed in the western cutbank of the stream at about 100 cm surface depth (sd). It may contain another component that is possibly of late Plains Woodland affiliation (Toom and Picha 1984). The surface of the site supports heavy to moderate stands of mixed grass prairie. The primary impact to the site consists of active gully cutting in the bench as well as lateral erosion of the bench by the stream.

Previous Archeological Research

The Sitting Buzzard site was first discovered and recorded in 1983 by an archeological survey team from the University of North Dakota (UND) under the direction of T. L. Steinacher (Toom and Picha 1984). This work was performed as part of a contractual agreement with the U.S. Army Corps of Engineers (USACE), Omaha District, to conduct an archeological survey of specified federal lands along the west bank of the Lake Sharpe project area (D. L. Toom, principal investigator; S. A. Ahler, co-principal investigator). Field work at the site by UND emphasized the generation of documentary information, particularly map data. Selected surface artifacts (primarily ceramics and a single arrow point) were also collected, and the presumed house depression was hand cored.

The possible house depression, designated Feature 1 (F1), is located on a flatter portion of the terrace surface (Figure 107). It is described as a circular feature with a diameter of approximately 6.5 m and a depth of about 30 cm below the surrounding ground surface (Figure 108). Hand probing of the depression by the UND crew revealed what appeared to be charcoal and burned earth at around 50 cm sd in one probe, suggesting it may represent the remains of an earthlodge or some other structure. Additional probes into the depression proved to be negative, and leaving the house interpretation open to question. A circular floor plan is assumed if the depression is in fact the remains of a house, but this could not be confirmed by hand coring alone. A sparse scattering of bone debris, native ceramics, and lithics was found over much of the site area, primarily on erosional surfaces. Faunal remains, apparently bison element fragments, and chipped stone flaking debris were observed the most frequently by the UND survey team.

A

B

Figure 106. General Photos of the Sitting Buzzard Site (39ST122). A: Aerial photo of the site locality, south view (photo no. 2611, UND 1983). B: Overview of site area with UND survey crew, northeast view (photo no. 2588, UND 1983).

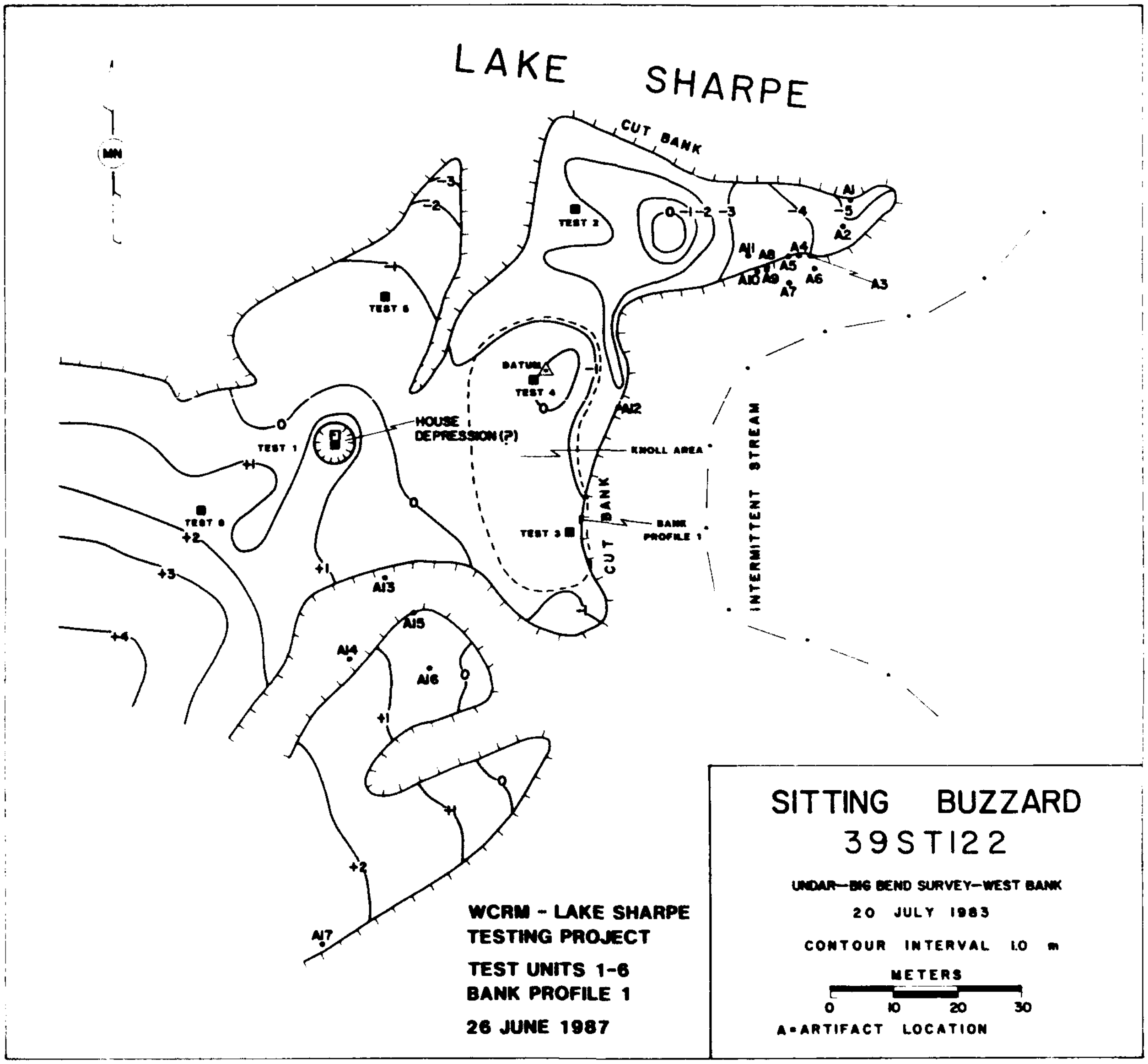


Figure 107. Contour Map of the Sitting Buzzard Site (39ST122).

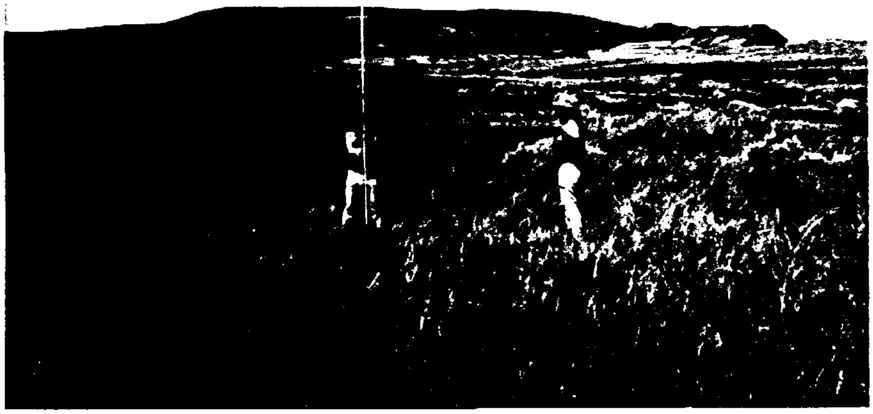


Figure 108. Photo of the Feature 1 Depression, Sitting Buzzard Site (39ST122). UND survey crew members mapping the depression, southwest view (photo no. 2587, UND 1983).

One partially complete projectile point was collected by the UND crew. It is a small, thin, well made side-notched arrow point that most closely resembles the Charmichael Wide-Eared variety of the Avonlea point type (Kehoe 1966, 1973; Kehoe and McCorquodale 1961). The point was found on a steeply sloping surface of detritus near the base of the stream cutbank. This type of arrow point is usually associated with late Plains Woodland occupations, so it is unlikely that it relates to the Plains Village component. UND investigators believe that the point was eroded from the buried soil horizon in the cutbank exposure.

Only two native ceramic body sherds were found by the UND crew, one smoothed and one smoothed with some vestiges of brushing. The brushed sherd was collected. Both sherds are described as buff colored and rather thick, but they are comparatively well made and exhibit a compact paste tempered with crushed granite. The surface pottery from the site hints at a Post-Contact Coalescent component, but the sample is far too small and nondescript to assign the Plains Village component to a definite variant. However, the presence of a circular house floor, if real, would lend further support to some sort of a Coalescent tradition occupation.

UND researchers concluded that the really unusual and interesting aspect of this site is the possible isolated earthlodge located at the terminus of an intermittent stream channel in the Breaks zone. Speculations made about the Ghost Lodge site regarding a potential hunting camp or occupation are equally applicable to Sitting Buzzard. The site was recommended for testing and evaluation as a potential National Register property.

Present Investigations

The purpose of this research is to act on the UND recommendations by testing and evaluating the site in terms of its eligibility for listing on the National Register of Historic Places. Determining the function, cultural affiliation, and research potential of the archeological component(s) represented at Sitting Buzzard is of primary concern. Establishing the vertical and horizontal boundaries of the site and assessing its artifactual content in various contexts are also important research considerations.

Fieldwork

Six 1 X 1 m test units were excavated to varying depths at the Sitting Buzzard site (Table 80). As it turns out, all of the test units were placed in extramural contexts. Test 1 was located in the center of Feature 1, the presumed earthlodge depression. This excavation was terminated at 30 cm sd when it became apparent through a combination of controlled excavation and hand coring that the depression is a natural feature. The other five tests were dispersed throughout the rest of the site area (Figure 107). None of the test units at Sitting Buzzard were combined into larger excavations. Surface collection of temporal-cultural diagnostic artifacts was not attempted in view of the complete surface inspection made at the site by the UND survey crew.

Table 80. Test Unit Specifications and Combined Units, Sitting Buzzard Site (39ST122).

Test Unit	Context	Combined Units and Aggregate Size	Excavated Depth	Excavated Volume
1	Feature 1	None - 1 X 1 m	30 cm	0.3 m^3
2	Extramural	None - 1 X 1 m	60 cm	0.6 m^3
3	Extramural	None - 1 X 1 m	100 cm	1.0 m^3
4	Extramural	None - 1 X 1 m	80 cm	0.8 m^3
5	Extramural	None - 1 X 1 m	60 cm	0.6 m^3
6	Extramural	None - 1 X 1 m	80 cm	0.8 m^3
Total				4.1 m^3

Test unit excavation proceeded according to 10 cm arbitrary levels. The sediment matrix from all excavation units was dry screened through one-quarter inch mesh hardware cloth screens. No water screen samples were collected at the site. All of the test units were either dug into clayey subsurface soil horizons or into and through the buried A horizon (Abk) which was present only in a restricted portion of the site. Inspection and mapping of the cutbank of the intermittent stream revealed very little change in the four years between the discovery of the site by UND and the fieldwork reported here. A 1 m wide section of the upper part of the cutbank was cleaned and profiled (Bank Profile 1).

Geomorphic Context and Stratigraphy

The Sitting Buzzard site is situated in the lower elevations of heavily dissected and eroded Missouri Breaks terrain adjacent to Lake Sharpe. The site occupies a narrow, low-lying bench (strath or rock-cut terrace) cut into Pierre Shale bedrock on the west side of an unnamed intermittent stream channel. The surface elevation trend of the bench indicates it is primarily a product of the action of the intermittent stream system, not the river. This geomorphic feature is little more than a terrace remnant. It has been subject to some degree of lateral erosion by the stream, which has truncated the bench and left a high cutbank exposure (Figure 109A). The cutbank profile shows evidence of extensive cutting and filling of the bench by old drainageways. The bench is presently being dissected by narrow, deep gullies at several locations. Tunnel gullying is also actively undermining portions of the surface of the bench, although this subsurface erosion is not as severe as in the eastern bench at the Ghost Lodge site.

The bench has an undulating surface with moderate to steep slopes and intermingled areas of flatter terrain. A low, narrow, flattopped knoll is present next to the cutbank of the stream (Figures 107 and 109B). The knoll is important to the geoarcheological interpretation of the site because it contains a more extensive cultural and natural stratigraphic sequence than is apparent in other locations. The surface of the bench ranges in elevation from about 1440-1450 ft amsl. It appears to be graded to the approximate level of the MT-2 terrace, which is located on the north side of the river opposite the site (cf. Coogan 1980). Following nomenclature developed by Coogan (1987), the bench would be designated as CMT-2 (Creek/Missouri Terrace-2) because it is a stream terrace that has been graded to the level of the primary MT-2 river terrace. The MT-2 terrace is a depositional (cut-and-fill) terrace (Coogan 1987:54). The relationship between the MT-2 and CMT-2 at Sitting Buzzard is unclear.

Profile Descriptions, Sediments, and Soils

The surface of the site consists of loess (silt loam) deposited on clayey colluvium. The colluvium derives from the higher Breaks terrain to the southwest of the site; it is deposited on Pierre Shale bedrock. This general depositional sequence can be seen quite clearly in the cutbank exposure along the stream channel (Figure 109A). The present surface soil at the site is designated as Sully-Sansarc complex (Borchers 1980:Sheet 57). The Sully soil is a deep silt loam occupying narrow ridges and downslope areas; the Sansarc

A

B

Figure 109. Overview Photos of the Western Stream Bench, Sitting Buzzard Site (39ST122). A: Stream cutbank and site area, west view (photo no. 3029, WCRM 1987). B: Site area with UND mapping crew on small knoll adjacent to cutbank, northeast view (photo no. 2590, UND 1983).

soil is a shallow clay located along drainageways. The Sully soil is of primary relevance here because it covers the bench and contains all of the identified cultural deposits. The Sansarc clay (or some related soil) is buried beneath the Sully silt loam in the bench. No archeological potential is attributed to the Sansarc clay at this location.

The thickness of the Sully silt loam varies according to topographic position within the site. Test units placed in the flattopped knoll next to the stream cutbank (Tests 3 and 4) contained silt loam to depths ranging from about 120-160 cm sd. Silt loam was recorded to a depth of 155 cm sd in the cutbank exposure of the knoll (i.e., Bank Profile 1). Test units placed beyond the knoll and away from the cutbank, on slightly higher slopes (Test 6), or on flatter, slightly lower terrain (Tests 2 and 5), contained silt loam to depths ranging from about 60-70 cm sd. The soil horizon sequence recorded in the Sully silt loam also varies by topographic position. The knoll area exhibits a general cumulative A/Bw/Abk/Bbk sequence over clayey colluvium (2Bbk). The horizons observed in test units in other parts of the site consists of a general cumulative A/Bw sequence overlying clayey colluvium (2Bbk). Deposition and/or preservation of the Sully silt loam is clearly more extensive in the slightly higher, flatter areas of the site adjacent to the stream cutbank (i.e., the knoll). The lower portion of the Sully silt loam is not preserved or was never deposited at other locations. This is probably the result of recent, localized erosion events in the bench, particularly gully cutting and filling, which do not seem to have affected the knoll area.

The more or less constant addition of loess parent material at the site has produced what is referred to as a cumulative soil profile in the Sully silt loam. Cumulative soils are those that receive influxes of parent material while pedogenesis is ongoing; in essence, soil formation and deposition occur simultaneously at the same location (Birkeland 1984:184-185). Overthickened or cumulative A horizons, those that are being gradually and continually buried during soil formation, are a common feature of cumulative soils. Cumulative A horizons, consisting of either surface or buried soils, are present in all of the test unit profiles at Sitting Buzzard, excepting that of Test 1 which was dug into Feature 1.

Detailed soil descriptions of selected test unit profiles can be found in Appendix C. Soil horizons recorded in the test excavations at the site are discussed below. Horizon nomenclature generally follows Birkeland (1984). Tests 3 and 4 and Bank Profile 1 are discussed as a group because they contain the deeper Sully silt loam horizon sequence that appears to be restricted to the area of the knoll next to the stream cutbank. Tests 2, 5, and 6 exhibit the shallower Sully silt loam horizon sequence that is probably typical of most of the rest of the site; they, too, are discussed as a group for this reason. Test 1, located in the natural depression (Feature 1), is unique unto itself and it is given individual treatment.

Test 1 (Feature 1). Test 1 was excavated into Feature 1, the circular depression that was presumed to contain the remains of an earthlodge (Figures 107 and 108). It was terminated at a depth of 30 cm sd where the surface of a wet, clayey soil was encountered. The soil sequence in Test 1 to a depth of 30 cm sd consists of a thin A horizon of silt loam (SiL), a 2A horizon of silty clay loam (SiCL), and a 3B horizon of silty clay (SiC) or clay (Figures 110 and 111A). Hand coring in the depression indicates that the 3B extends to

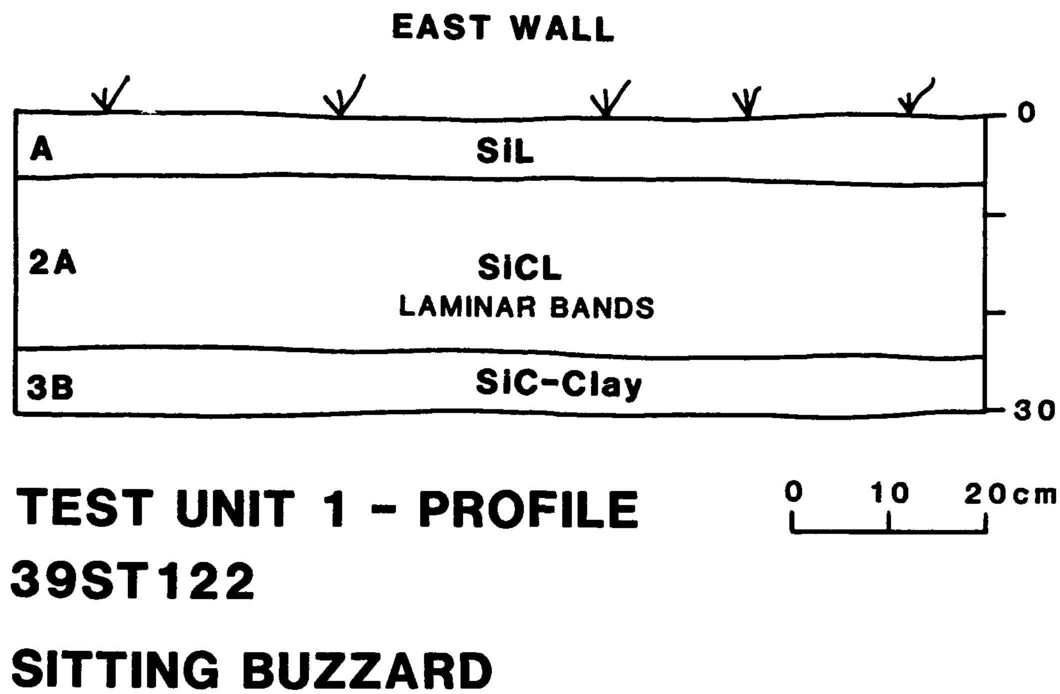
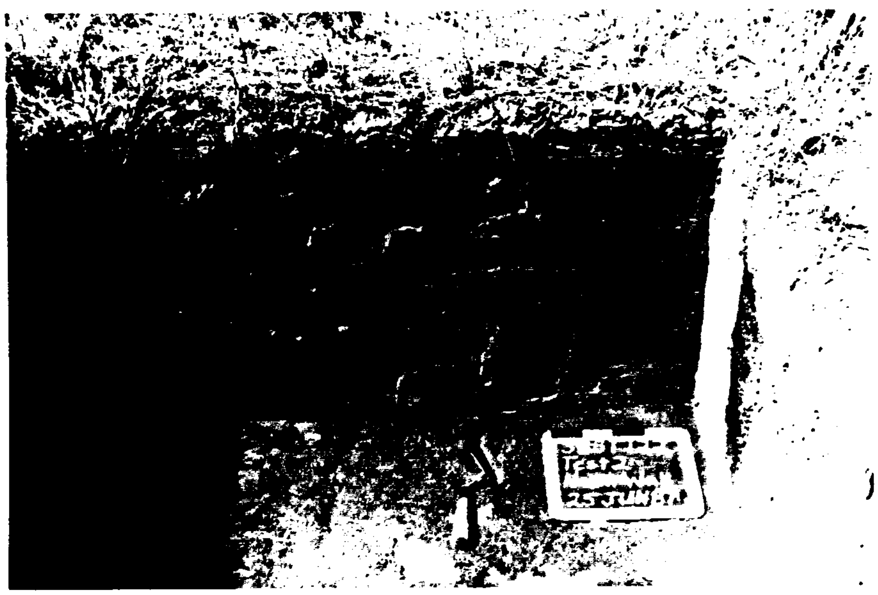


Figure 110. Profile Drawing of Test 1 in Feature 1, Sitting Buzzard Site (39ST122).

A



B

Figure 111. Profile Photos of Tests 1 and 2, Sitting Buzzard Site (39ST122). A: East wall of Test 1 (photo no. 3024, WCRM 1987). B: North wall of Test 2 (photo no. 3020, WCRM 1987).

at least 150 cm sd. The entire profile was moist to wet when these investigations were conducted. The 3B was completely water saturated below a depth of about 50 cm sd. It also contained a number of voids or soft spots beneath this depth that are probably a result of subsurface erosion. No evidence of the remains of an earthlodge or other cultural deposits were encountered in the excavation or in the numerous hand cores that were made in the depression to a depth of about 150 cm sd. The small quantity of charcoal and burned earth reported by UND investigators at a depth of about 50 cm sd in a single probe appears to be based on a mistaken observation.

The surface A horizon is formed in relatively recent loess that has been trapped in the depression. The 2A horizon is a mixed unit of loess and clayey colluvium that exhibits many fine laminar bands, which indicate it was deposited as slopewash from the margins of the depression. The 3B horizon is interpreted as clayey colluvium. Probing indicates it extends to considerable depth, and it is thought that this material is the fill of an old drainageway in the bench. The water saturated condition of the 3B, as well as the presence of soft spots and voids, suggests that the drainageway is undergoing rejuvenation as a result of subsurface water flow and active tunnel gullying in the bench. A gully located to the northwest of the depression is currently expanding toward this feature. Localized subsidence from subsurface erosion is the most plausible explanation for the formation of the depression. Feature 1 is, therefore, interpreted as a natural depression.

<u>Tests 2, 5, and 6</u>. These test units were excavated in portions of the site beyond the area of the knoll (Figure 107). Test 2 was placed on a small, low-lying flat in the northern remnant of the bench; Test 5 was situated in a similar topographic setting in the northwestern part of the site; and Test 6 was located at the base of a slightly higher slope in the southwestern part of the site. All three tests yielded a uniform soil horizon sequence consisting of A1, A2, and Bw horizons of silt loam overlying a clayey 2Bbk horizon (Figures 111B-115). Collectively, the A1 and A2 horizons represent a cumulative surface A, which seems to be typical of these parts of the site. The A and Bw horizons in Tests 2, 5, and 6 are interpreted as a Sully silt loam; the 2Bbk horizons are a buried Sansarc clay or some related soil formed in clayey colluvium.

<u>Tests 3 and 4 and Bank Profile 1</u>. Tests 3 and 4 were placed in the small knoll located next to the stream/bench cutbank (Figure 107). Tests 3 and 4 exhibit a uniform soil sequence consisting of A, Bw, Abk, and Bbk horizons formed in Sully silt loam (Figures 116-118). Hand coring in the floor of Tests 3 and 4 indicates the Bbk extends to depths of about 120 and 160 cm sd, respectively. A clayey 2Bbk horizon was encountered beneath the Bbk at these depths in the two test units. The 2Bbk is interpreted as Sansarc clay or some related soil formed in clayey colluvium.

The profile of the cutbank opposite the knoll, designated Bank Profile 1 (Figure 107), exhibits much the same stratigraphic sequence as that recorded in Tests 3 and 4. The only exception is that the Abk horizon in the cutbank exposure is divisible into three subunits, designated A1bk, A2bk, and A3bk (Figures 119 and 120). The Abk horizons in Bank Profile 1 and Tests 3 and 4 are correlatable on the basis of stratigraphic position and soil horizon properties. They represent a cumulative A horizon of what is essentially the

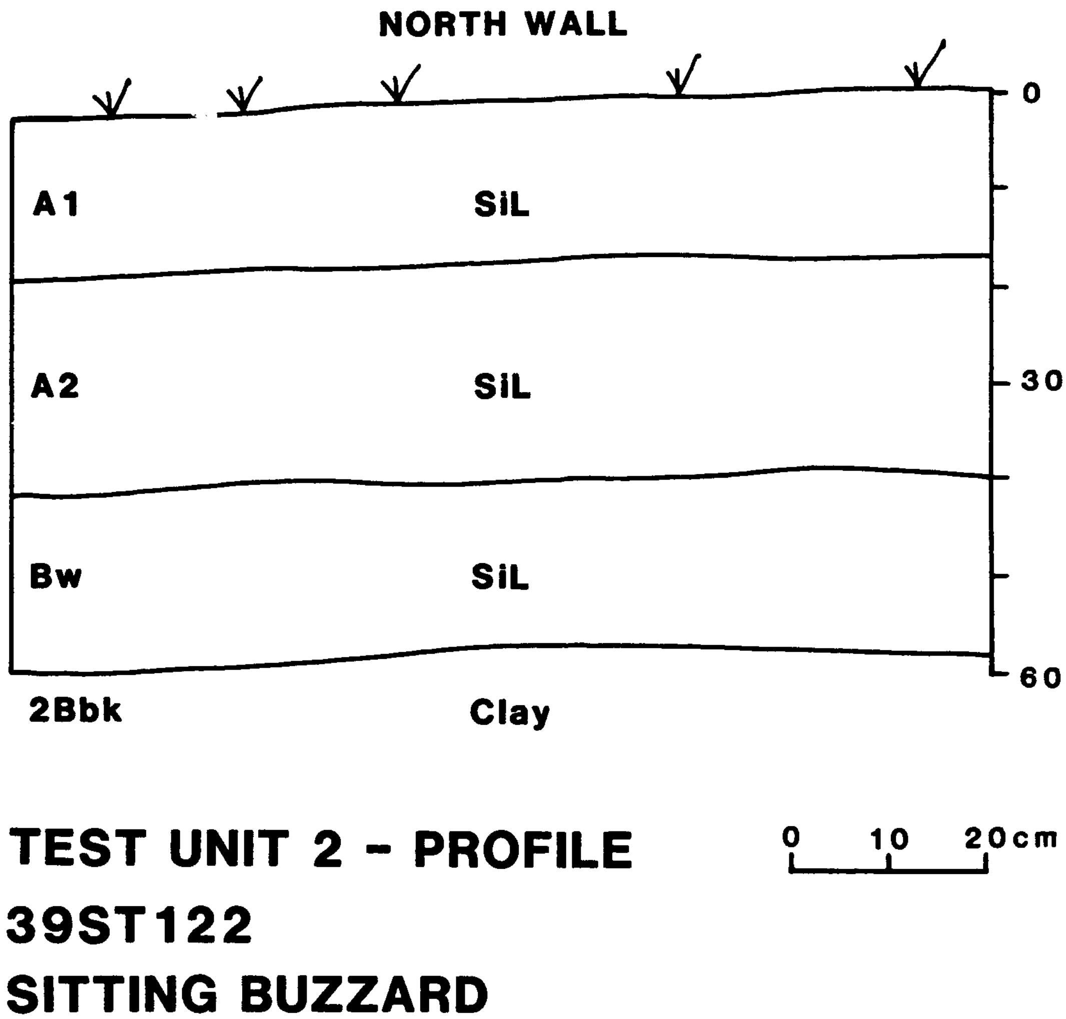


Figure 112. Profile Drawing of Test 2, Sitting Buzzard Site (39ST122).

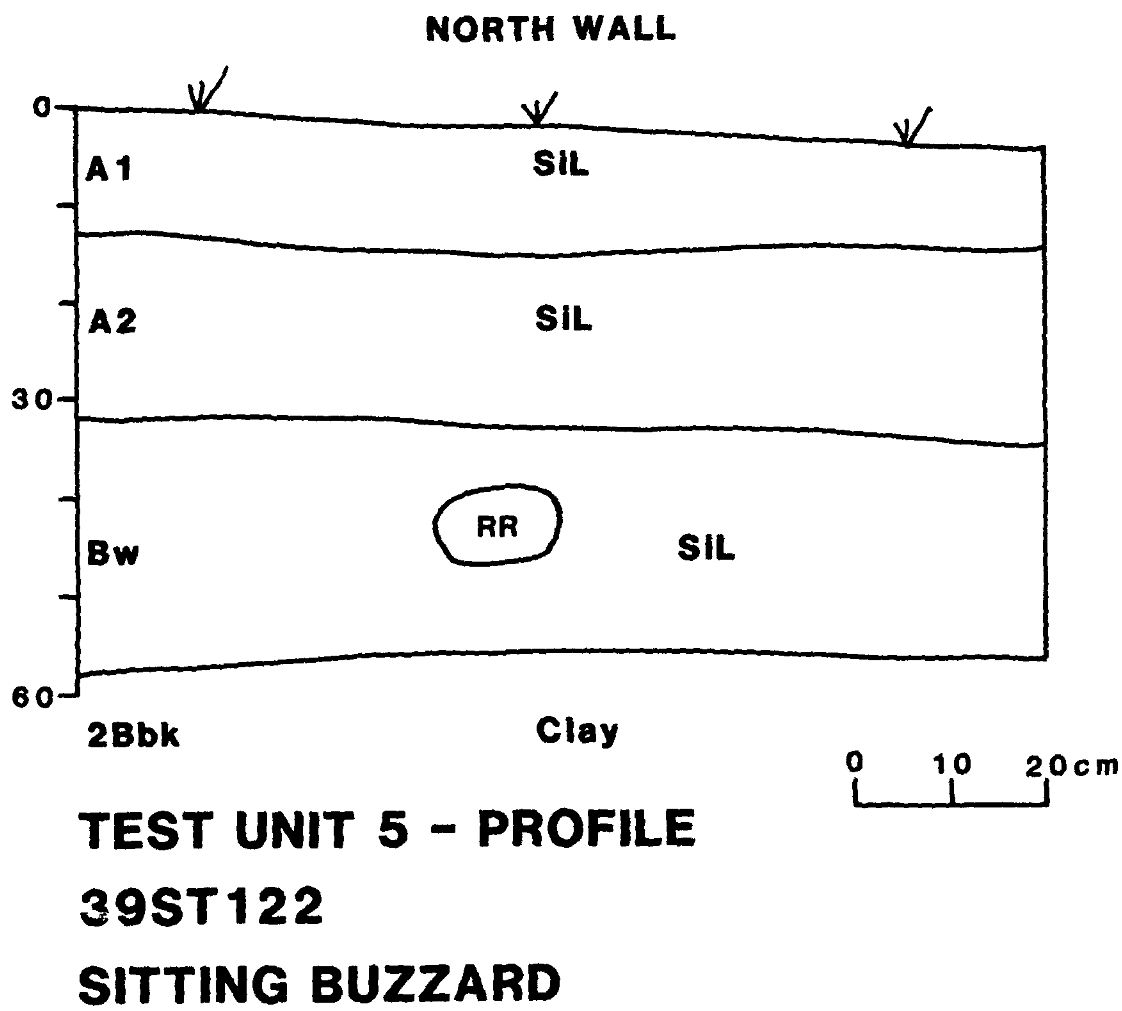


Figure 113. Profile Drawing of Test 5, Sitting Buzzard Site (39ST122).

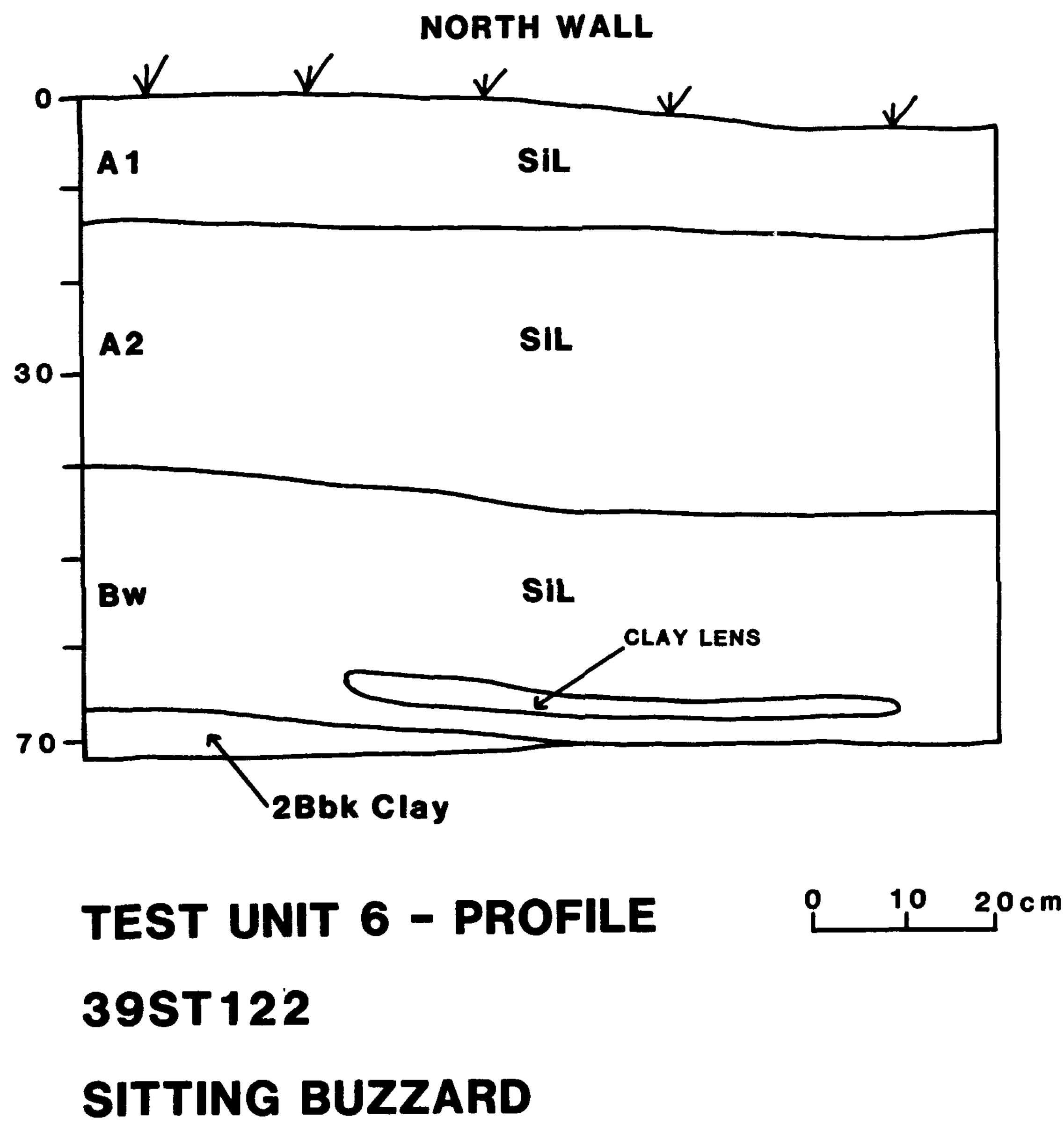
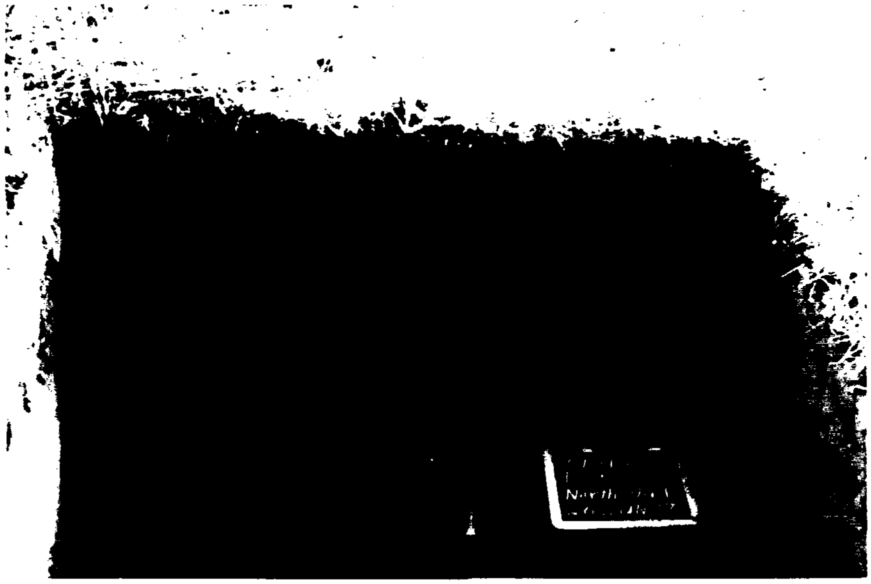


Figure 114. Profile Drawing of Test 6, Sitting Buzzard Site (39ST122).



A

B

Figure 115. Profile Photos of Tests 5 and 6, Sitting Buzzard Site (39ST122). A: North wall of Test 5 (photo no. 3027, WCRM 1987). B: North wall of Test 6 (photo no. 3035, WCRM 1987).

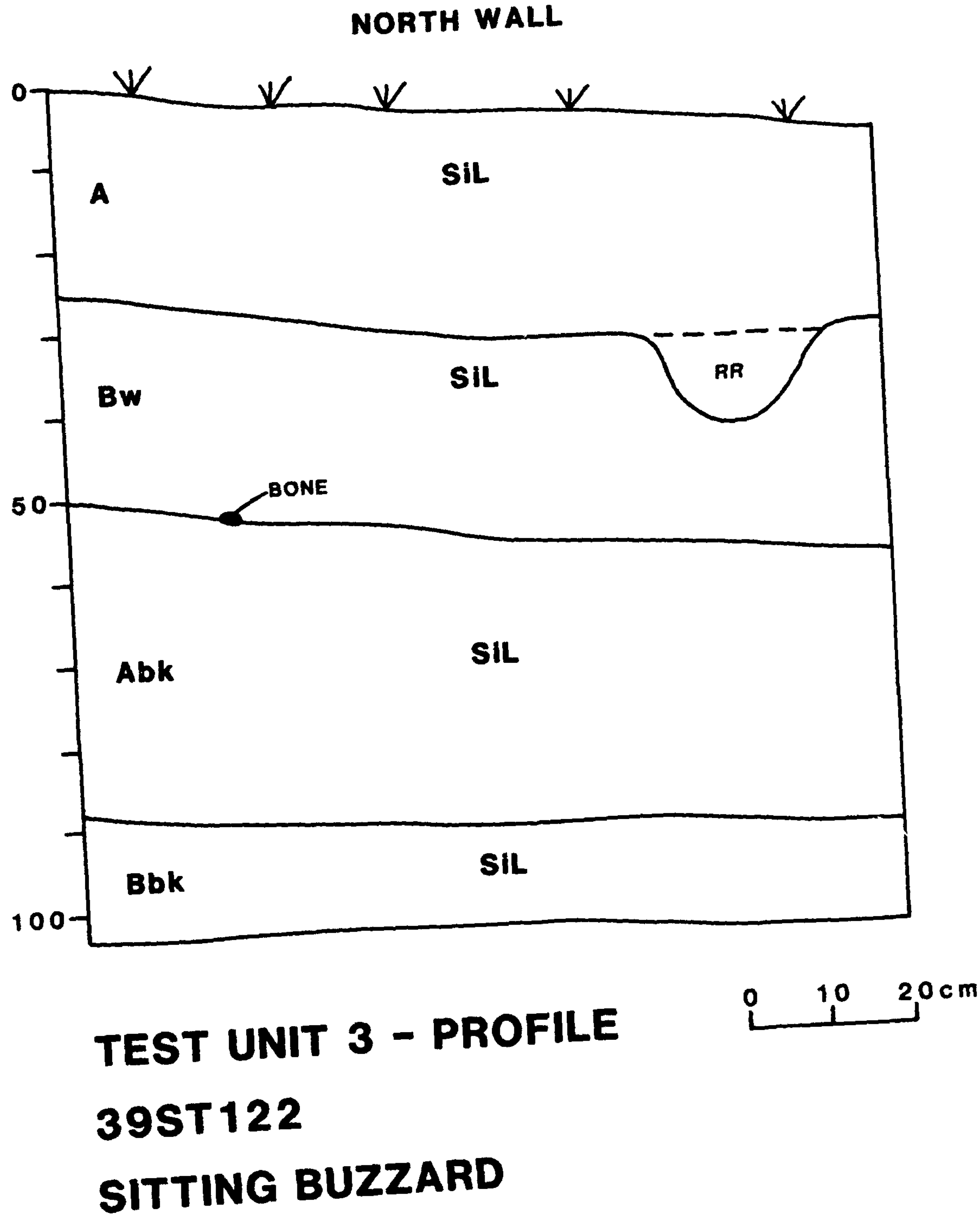


Figure 116. Profile Drawing of Test 3, Sitting Buzzard Site (39ST122).

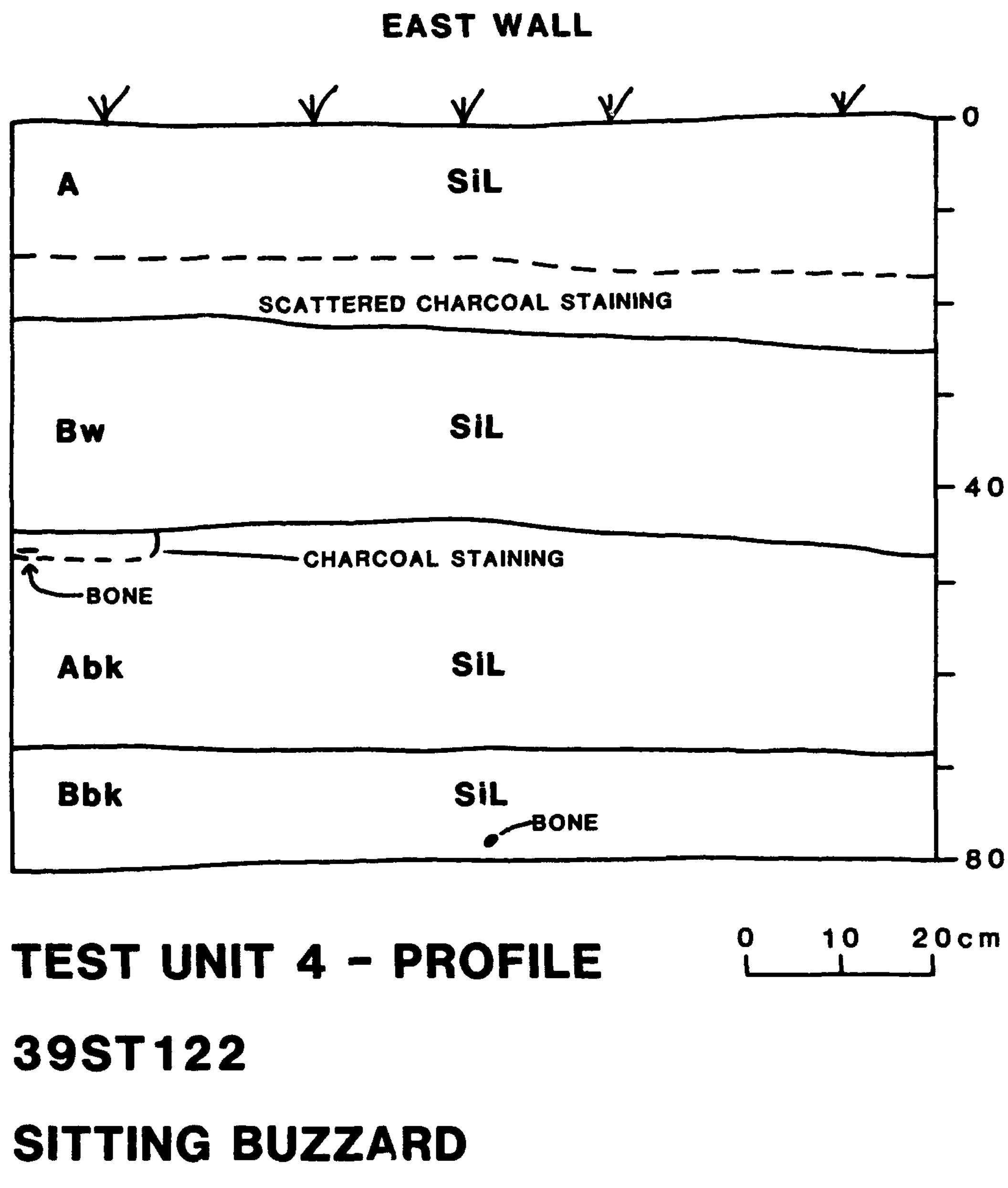
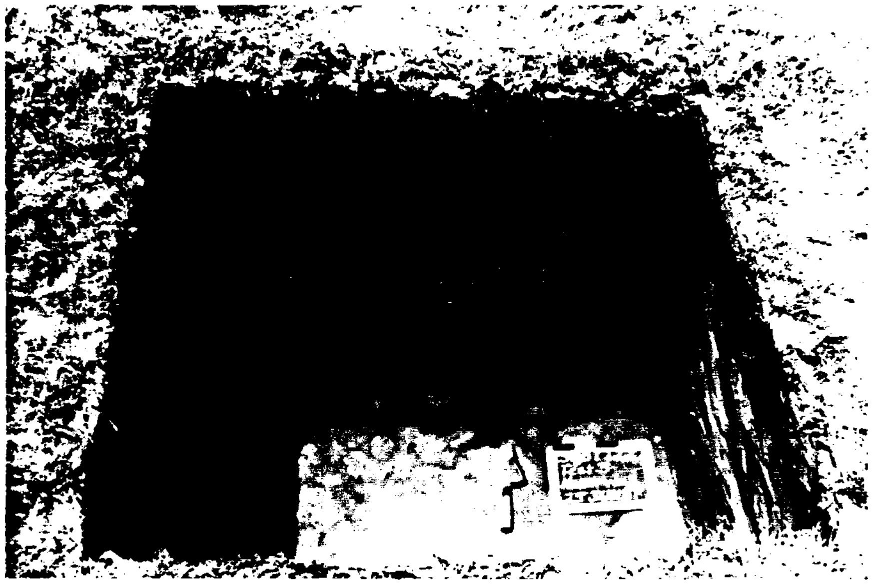
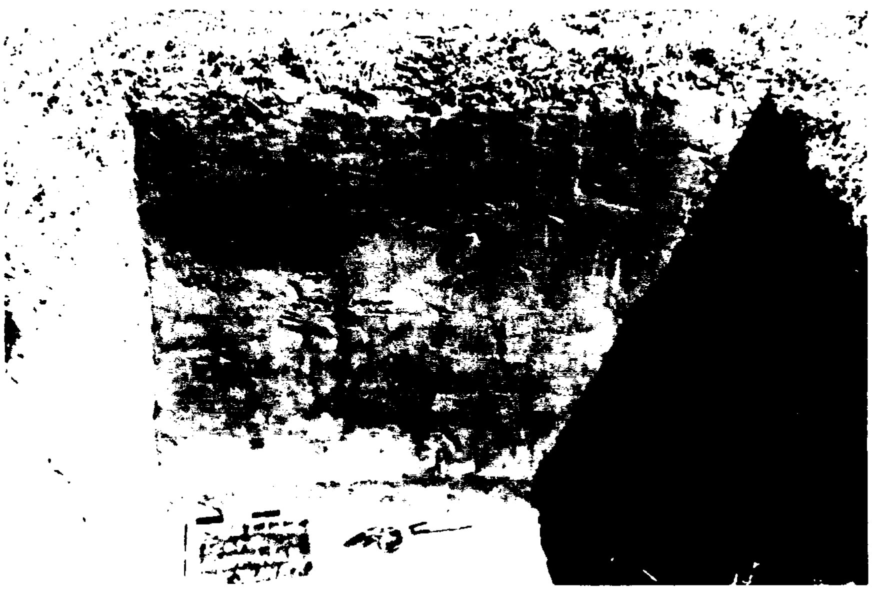


Figure 117. Profile Drawing of Test 4, Sitting Buzzard Site (39ST122).



A



B

Figure 118. Profile Photos of Tests 3 and 4, Sitting Buzzard Site (39ST122). A: North wall of Test 3 (photo no. 3017, WCRM 1987). B: East wall of Test 4 (photo no. 3023, WCRM 1987).

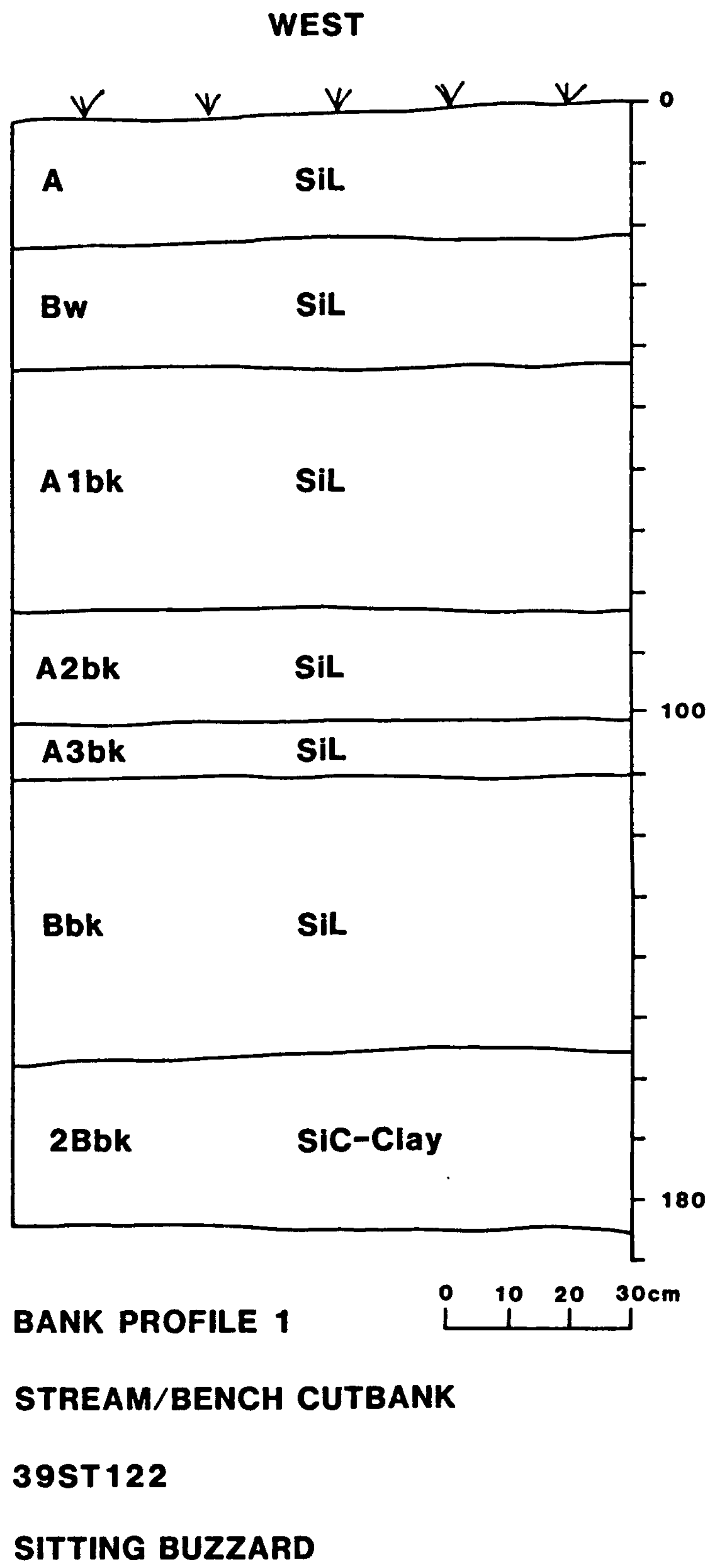


Figure 119. Profile Drawing of Bank Profile 1, Sitting Buzzard Site (39ST122).

Figure 120. Profile Photo of Bank Profile 1, Sitting Buzzard Site (39ST122). Upper profile of the stream cutbank, west view (photo no. 3036, WCRM 1987).

same buried soil. The greater thickness and complexity of the Abk in Bank Profile 1 remains unexplained. A localized catena effect in the buried surface of the bench is a distinct possibility. The term catena refers to lateral variability in soils produced by hillslope processes (Birkeland 1984:238). In this case, the greater thickness and complexity of the Abk in the cutbank exposure may be the result of a former downslope position in the bench. Additional excavations are required to resolve this problem.

Cultural Associations

Vertical artifact displacement in the loess cap caused by burrowing animals and other natural processes has blurred the cultural stratigraphy at the site. This, and overall low artifact densities, makes it difficult to pinpoint prehistoric occupation zones. Nevertheless, enough data are available to correlate the aboriginal components at the site with recorded soil horizons.

Post-Contact Coalescent Occupation Zone. Artifactual remains from the Post-Contact component were found over much of the site area. Tests 1 and 6 did not produce any identifiable Post-Contact artifacts. Tests 2 and 5 did yield recognizable Post-Contact materials. In these tests, which were located in parts of the site other than the knoll, Post-Contact Coalescent artifacts were generally found in the upper 40 cm of the Sully silt loam. This depth corresponds to the A1 and A2 horizons, which, collectively, represent an overthickened surface A. Test 2 produced the majority of the Post-Contact remains, most of which were found near the surface of the A2 horizon. Most of the Post-Contact artifacts from Test 5, of which there are not many, were also recovered from near the surface of the A2. On this basis, the Post-Contact Coalescent zone is correlated with the surface of the A2 horizon in those areas of the site that lack a cumulative surface A horizon (i.e., the knoll area).

In Tests 3 and 4, located in the knoll area, Post-Contact artifacts were generally restricted to the upper 20 cm of the Sully silt loam, which generally relates to the noncumulative surface A horizon found in this part of the site. More precisely, most artifacts from Tests 3 and 4 were found from about 10-20 cm. This depth corresponds to the middle of the A horizon, therefore, the Post-Contact Coalescent occupation zone is correlatable with the middle of the A horizon in the vicinity of the knoll. This would also be true of any other areas of the site lacking cumulative (overthickened) surface A horizons.

Unknown Prehistoric Occupation Zone. Evidence of an unknown prehistoric component, which may or may not be real, was encountered only in Tests 3 and 4 in the knoll area. This potential component was isolated between the Post-Contact and late Plains Woodland occupations zones at depths ranging from about 30-50 cm sd, which correlates with the bottom of the Bw horizon in this part of the site. The Bw horizon is present throughout the site, and it is believed to represent the same stratigraphic unit at all locations, but indications of a potential unknown prehistoric component were only found in the knoll area test units.

Late Plains Woodland Occupation Zone. Materials attributable to the late Plains Woodland component were also confined to Tests 3 and 4 in the knoll area. Artifacts from this component were found from about 70-100 cm sd in Test 3 and about 50-80 cm sd in Test 4, with most remains concentrated at 70-90 cm sd and 60-70 cm sd, respectively. These depths correspond to the base of the Abk horizon. It is therefore possible to correlate the late Plains Woodland occupation zone with the lower portion of the Abk, which is a buried cumulative A horizon. The Abk horizon was only observed in the knoll area, although it is possible that this stratigraphic unit is also preserved to a limited extent in other higher elevation locations near the stream cutbank to the north and south of the knoll. The limited scope of the testing project precluded excavations in these parts of the site. It is not immediately clear just how the late Plains Woodland zone is represented in the series of three Abk horizons recorded in Bank Profile 1. Stratigraphic trends suggest a likely association with A2bk and/or A3bk horizons.

Archeological Components, Radiocarbon Dates, and Analytic Units

The Sitting Buzzard site is known to contain at least three and possibly as many as four archeological components on the basis of this research and previous research conducted at the site by UND. These are, in chronological order:

1. Recent, Historic (ca. early to mid-A.D. 1900s);

2. Plains Village, Post-Contact Coalescent (Bad River phase) (ca. A.D. 1675-1780);

3. Unknown Prehistoric; and

4. Late Plains Woodland (ca. A.D. 600-1000).

The recent (historic) component consists entirely of very small amounts of scattered surface debris. No associated historic structural remains are present at the site. The unknown prehistoric component is represented by small quantities of subsurface debris found between the Post-Contact Coalescent occupation zone and the older, deeper late Plains Woodland occupation zone in the knoll area. No temporal-cultural diagnostic artifacts are relatable to this component, and it is not assignable to a recognized archeological taxa. There is a distinct possibility that the unknown component is more apparent than real, being a product of vertical artifact displacement from the Post-Contact Coalescent and late Plains Woodland occupation zones. No archeological significance is attached to either the historic or unknown prehistoric components at the site.

The Post-Contact Coalescent component is a near-surface phenomenon consisting of widely scattered occupational debris found throughout the site area. Very limited ceramic evidence suggests an affiliation with the Bad River phase, which is considered to be protohistoric Arikara (Hoffman and Brown 1967; Lehmer 1971; Lehmer and Jones 1968). The late Plains Woodland component is represented by rather deeply buried occupational debris associated with a buried A horizon in the Sully silt loam (Abk). Its presence

is probably restricted to the area of the small knoll next to the cutbank of the stream, which is the only part of the site where the Abk appears to have developed or has been preserved. The identification of this component as late Plains Woodland is based exclusively on projectile point typology. No native ceramics were found in the limited excavated area of the Abk horizon. Both the Post-Contact Coalescent and the late Plains Woodland components are potentially significant. The late Plains Woodland occupation is of particular importance because relatively few intact components of this period are documented in the Lake Sharpe area.

No materials suitable for reliable radiocarbon dates were recovered from the test excavations at Ghost Lodge. The date ranges stated for the identified components are based solely on the the estimated time frames of related temporal-cultural diagnostic artifacts.

The description and analysis of artifactual remains collected at the Sitting Buzzard site proceeds according to identified cultural components. Artifacts are assigned to these cultural-historic analytic units on the basis of cultural-stratigraphic associations in individual test units.

Features

Direct evidence of cultural features is entirely lacking in the test excavations completed at Sitting Buzzard. As discussed above, Feature 1 proved to be a natural depression that is probably a product of subsurface erosion in an old gully. There is presently no reason to believe that this depression contains the remains of an earthlodge. Indirect evidence of features was uncovered in some of the test excavations, particularly those excavated into the late Plains Woodland occupation zone. The presence of small quantities of burned bone, fire-cracked rock, and burned earth suggests that hearths and related features are present somewhere in the site. Most of the burned bone and fire-cracked rock in the site collection is associated with the late Plains Woodland component, and the knoll area where this component is located is the most likely place to find such features.

Native Ceramics

Native ceramic sherds recovered from the test excavations at Sitting Buzzard total 58 G2-3 sized specimens, including 54 body sherds and four rim sherds. All were found in the upper levels of Tests 2-5, and they are attributed to a single late ceramic period occupation. The limited pottery sample from the site is characteristic of a Post-Contact Coalescent variant assemblage (cf. Johnson 1980) of probable Bad River phase (Arikara) affiliation (cf. Hoffman and Brown 1967; Lehmer 1971; Lehmer and Jones 1968). These artifacts are the primary criterion for the identification of the late ceramic component as Post-Contact Coalescent.

The ceramic sample is highly fragmented and no complete or even partially complete and reconstructable vessels are present in the collection. Most sherds appear to be from globular-shaped jars. Overall, the ceramics from the site are very thick and of comparatively poor quality. The paste is fairly

compact and tempered with crushed granite (grit). The majority of the sherds are gray to grayish black in color. A few brown to buff colored specimens are also present in the sample, which are generally thinner and of better quality that the darker colored sherds.

Body Sherds

The body sherd sample from Sitting Buzzard consists of 54 specimens, including 18 G2 and 36 G3 sherds. Most of the body sherds were recovered from the upper levels of Test 2 (Table 81). Tests 1 and 6 did not produce any ceramics, and Tests 3-5 yielded only a few body sherds. Body sherd surface treatment data were recorded for all G2 specimens in the sample (Table 82). Ten of the 16 classifiable body sherds exhibit plain/smoothed surface treatment (62.5%), four are simple stamped (25.0%), and two are brushed (12.5%). Two other body sherds were recorded as indeterminate. Virtually all of the classifiable specimens are from Test 2. Maximum thicknesses for all G2 body sherds were also recorded. A mean value of 6.4 ± 1.4 mm was computed for these specimens. This value is considerably higher than any of the other mean maximum G2 body sherd thicknesses recorded for the other tested sites. Body sherd surface treatment and thickness data support a Post-Contact Coalescent interpretation (cf. Johnson 1980).

Table 81. Native Ceramic Body Sherd Size Grade Data by Test Unit, Post-Contact Coalescent Component, Sitting Buzzard Site (39ST122).

Test Unit Number		Size Grade			
		Grade 1	Grade 2	Grade 3	Total
1	n	-	-	-	-
	%	-	-	-	-
2	n	-	16	30	46
	%	-	34.8	65.2	100.0
3	n	-	-	2	2
	%	-	-	100.0	100.0
4	n	-	-	2	2
	%	-	-	100.0	100.0
5	n	-	2	2	4
	%	-	50.0	50.0	100.0
6	n	-	-	-	-
	%	-	-	-	-
Total	n	-	18	36	54
	%	-	33.3	66.7	100.0

Table 82. Native Ceramic Body Sherd Surface Treatment Data by Test Unit, Size Grade 2 Only, Sitting Buzzard Site (39ST122).

Test Unit		Plain/ Smoothed	Simple Stamped	Brushed	Total Classified	Indeterminate	Total
1	n	-	-	-	-	-	-
	%*	-	-	-	-	-	-
2	n	9	3	2	14	2	16
	%	64.3	21.4	14.3	100.0	-	-
3	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
4	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
5	n	1	1	-	2	-	2
	%	50.0	50.0	-	100.0	-	-
6	n	-	-	-	-	-	-
	%	-	-	-	-	-	-
Total	n	10	4	2	16	2	18
	%	62.5	25.0	12.5	100.0	-	-

*Percentages are calculated based on the total number of classifiable sherds; indeterminate body sherds are excluded from percentage calculations.

Rim Sherds and Vessels

Only four rim sherds were found in the test excavations at Sitting Buzzard. Three were recovered from Test 2, and one was present in Test 4. After matching, the four rims were found to represent only two vessels. The three rims from Test 2 all derive from the same vessel, while the single rim from Test 4 is actually a small strap handle from a different vessel. Both vessels are classified as types of Stanley Braced Rim ware. Stanley ware is associated exclusively with the Post-Contact Coalescent variant (Johnson 1980), and it is a definitive characteristic of the Bad River phase of the upper Big Bend region (Lehmer and Jones 1968). Descriptions of the ceramic types identified in the Ghost Lodge sample are contained in the following paragraphs. A rim section from vessel 1 and the strap handle from vessel 2 are illustrated in Figure 121.

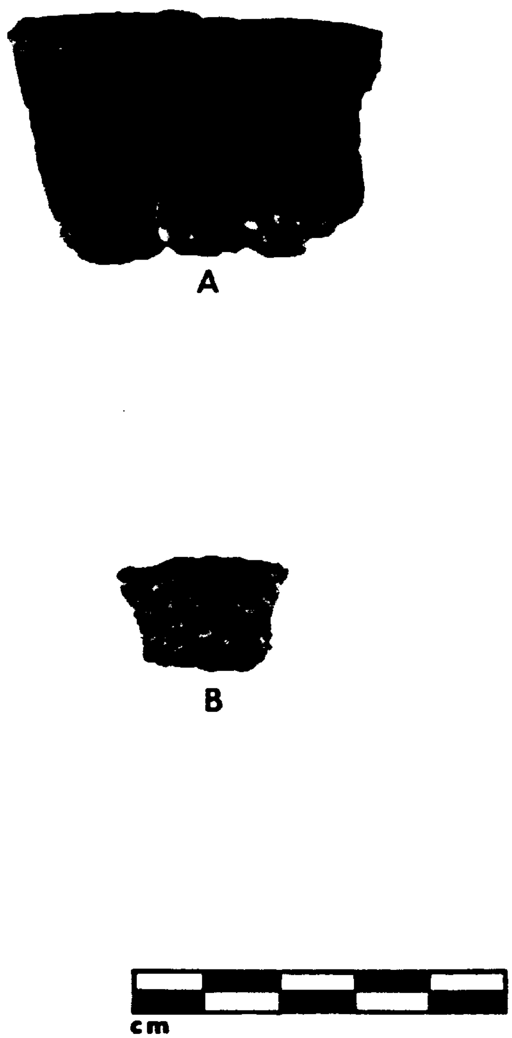


Figure 121. Photos of Native Ceramic Rim Sherds, Post-Contact Coalescent Component, Sitting Buzzard Site (39ST122). A: Stanley Pinched (Wavy Rim). B: Strap handle (Stanley Cord Impressed?)

Stanley Pinched (Wavy Rim). Vessel 1; n=1; Figure 121A.

Ware: Stanley Braced Rim   Type: Stanley Pinched (Wavy Rim)
Rim form: straight/curved.
Exterior rim decoration: undecorated.
Lip decoration: finger impressed, pinched.
Decoration motif: not applicable.
Exterior rim surface treatment: brushed.
Lip form: thickened (braced), rounded to flat.

The Stanley Pinched type was originally called Stanley Wavy Rim when it was first defined for Post-Contact Coalescent components in the vicinity of Oahe Dam (Lehmer 1954:43-44). The type was later renamed Stanley Pinched in the Bad River phase report by Lehmer and Jones (1968). Stanley Pinched is a common element of Bad River phase assemblages (Lehmer and Jones 1968:26-27, 98).

Stanley Cord Impressed. Vessel 2; n=1; Figure 121B.

Ware: Stanley Braced Rim?   Type: Stanley Cord Impressed?
Rim form: strap handle.
Decoration: cord impressed.
Decoration motif: horizontal lines.

The classification of this strap handle as Stanley Cord Impressed is questionable, but based on sound reasoning. Handles occur on the Stanley Cord Impressed type more frequently than other types of Stanley ware. In addition, the strap handles on Stanley Cord Impressed vessels are typically decorated with horizontal cord impressed lines, which is a continuation of the associated rim (lip) decoration (Lehmer 1954:44; Lehmer and Jones 1968:26). Assuming that this handle is from a Stanley ware vessel, which seems reasonable, it is therefore likely that it represents a handle from a Stanley Cord Impressed vessel. The type Stanley Cord Impressed was first defined for Post-Contact Coalescent components in the vicinity of Oahe Dam (Lehmer 1954:45). It was later used as a distinguishing characteristic of the Bad River phase (Lehmer and Jones 1968:26, 98).

Stone Tools

Eight chipped stone tool specimens were recovered from the test excavations at the Sitting Buzzard site. No pecked/ground stone tools are present in the sample. Descriptive categories represented include patterned triangular bifaces (n=1), patterned notched bifaces (n=2), other retouched and modified flakes (n=4), and bipolar cores/tools (n=1). Six tools are single function implements, and two are double function, for a total of 10 functional tool occurrences. Two of the other retouched and modified flakes, totaling three functional occurrences, are assigned to the unknown prehistoric component. The six other tools, including seven functional occurrences, are attributed to the late Plains Woodland component. No stone tools were found in Post-Contact Coalescent contexts. The complete absence of chipped stone tools in the Post-Contact Coalescent assemblage may be an indication of a

degeneration in lithic technology similar to that proposed for the Post-Contact component at Ghost Lodge.

Tool Technology

Technological classification of the Sitting Buzzard stone tools is summarized according to test unit and component in Table 83. The range of technological forms is very limited. This is either a reflection of small sample size due to the limited extent of the excavations or a specialized site function. Unpatterned flake tools are the most common technological form (n=6), followed by small thin patterned bifaces (n=3), and bipolar core-tools (n=1). All of the tools were found in Tests 3 and 4 in the area of the knoll. As was mentioned above, most are attributed to the late Plains Woodland component.

Technology and Lithic Raw Materials

Lithic raw material type frequency data for those technological classes represented in the late Plains Woodland tool sample are presented in Table 84. Only five different raw material types were identified. The sample shows a slightly higher percentage of various local materials (57.1%) as opposed to nonlocal lithic types (42.9%). Nonlocal materials include one specimen of Knife River flint from the northern resource group and two specimens of Flattop chalcedony from the western resource group. The sample is far too small to suggest any sort of definite pattern of lithic resource utilization for the late Plains Woodland component. However, the use of materials from distant northern and western sources is documented. The three unpatterned flake tools assigned to the unknown prehistoric component are made of locally available lithic types, including two specimens of solid quartzite and one specimen of jasper/chert.

Function and Use-Phase

The three functional tool occurrences attributed to the unknown prehistoric component consist of two utilized flakes used to saw or slice hard material (class 22), and one retouched or utilized flake used on variable material (class 23). The two class 22 tools are assigned to use-phase class 4 and the single class 23 tool is assigned to use-phase class 3.

Data on the functional classification of the late Plains Woodland stone tools from Sitting Buzzard according to use-phase class are contained in Table 85. Selected specimens are illustrated by functional class in Figure 122. The tool sample from this component shows a very limited range of functions, which is also a reflection of the limited number of technological forms. As before, this is either a reflection of sample bias or an indication of a specialized site function. The relatively high percentage of projectile points (arrow points) (42.9%), including two unfinished specimens that were broken or rejected during manufacture (use-phase 2) and one finished specimen that was broken during use (use-phase 4), indicates that the maintenance and refitting of projectile weapons (arrows) was probably an important activity performed by the late Plains Woodland occupants of the site. The general

Table 83. Stone Tool Technological Class Data by Test Unit and Component, Sitting Buzzard Site (39ST122).

Technological Class		Unknown	Late Plains Woodland		Total
		Test Unit 4	Test Unit 3	Test Unit 4	
1 Small Thin Patterned Bifaces	n	-	-	3	3
	%	-	-		30.0
2 Large Thin Patterned Bifaces	n	-	-	-	-
	%	-	-	-	-
3 Irregular Unpatterned Bifaces	n	-	-	-	-
	%	-	-	-	-
4 Patterned Flake Tools	n	-	-	-	-
	%	-	-	-	-
5 Unpatterned Flake Tools	n	3	3	-	6
	%	-	-	-	60.0
6 Thick Bifacial Core-Tools	n	-	-	-	-
	%	-	-	-	-
7 Nonbipolar Cores-Tools	n	-	-	-	-
	%	-	-	-	-
8 Bipolar Core-Tools	n	-	1	-	1
	%	-		-	10.0
9 Unpatterned Pecked/Ground Stone Tools	n	-	-	-	-
	%	-	-	-	-
10 Patterned Pecked/Ground Stone Tools	n	-	-	-	-
	%	-	-	-	-
Total	n	3	4	3	10
	%	30.0	40.0	30.0	100.0

Table 84. Stone Tool Raw Material Type Data by Technological Class, Late Plains Woodland Component, Sitting Buzzard Site (39ST122).

Resource Group/ Raw Material		Class 1	Class 5	Class 8	Total n	Total %
Local Resource Group						
06 Jasper/Chert		-	1	-	1	14.3
08 Clear/Gray Chalcedony		1	-	1	2	28.6
10 Dark Brown Chalcedony		1	-	-	1	14.3
Subtotal, Local		2	1	1	4	57.1
Northern Resource Group						
28 Knife River Flint		1	-	-	1	14.3
Western Resource Group						
07 Flattop Chalcedony		-	2	-	2	28.6
Subtotal, Nonlocal		1	2	-	3	42.9
Total	n	3	3	1	7	100.0
	%	42.9	42.9	14.3	100.1	

Table 85. Stone Tool Functional Class Data by Use-Phase Class, Late Plains Woodland Component, Sitting Buzzard Site (39ST122).

General Functional Group/ Specific Functional Class		Use-Phase Class 1	2	3	4	Total
1. Projectile Points						
01 Projectile point		-	2	-	1	3
5. Prepared or Regularly Modified Unpatterned Flake Tools						
23 Retouched or utilized flake used on variable material		-	-	-	2	2
6. Unprepared or Irregularly Modified Unpatterned Flake Tools						
22 Utilized flake used to saw or slice hard material		-	-	-	1	1
12. Bipolar Tools or Potential Tools						
25 Core/punch/wedge/chisel		-	-	-	1	1
Total	n	-	2	-	5	7
	%	-	28.6	-	71.4	100.0

functional groups and specific functional classes represented in the sample are discussed in greater detail in the Antelope Dreamer site report. Only the projectile point forms are considered further here.

The three late Plains Woodland projectile points in the site sample are all small, thin arrow point forms. All were found in Test 4 — one from 50-60 cm sd and two from 60-70 cm sd. One is a base fragment from an unfinished, unnotched triangular specimen that was broken during the early stages of manufacture (use-phase 2); it is made of clear/gray chalcedony (Figure 122A). The other two are side-to-corner-notched specimens with notching occurring very low on the base. One notched point is more or less complete but appears to be unfinished and unused; it was probably rejected during manufacture (use-phase 2) because of an inability to remove a relatively thick area of cortex from the face of the flake blank. The specimen is made of dark brown chalcedony (silicified wood). The notches on this point appear to be oriented more to the side of the base, which lacks ears and has a crude tanged appearance (Figure 122C). The other notched specimen consists of the base of

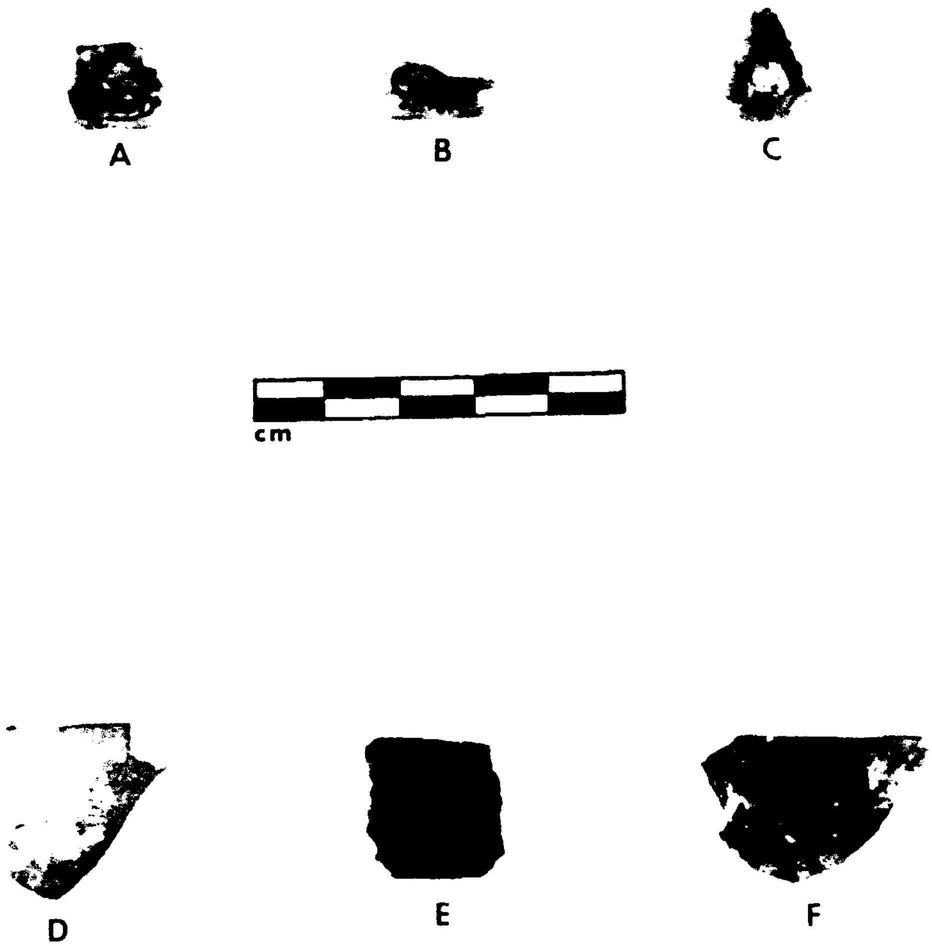


Figure 122. Photos of Chipped Stone Tools, Late Plains Woodland Component, Sitting Buzzard Site (39ST122). A-C: Projectile (arrow) points (class 01). D: Utilized flake used to saw or slice hard material (class 22) and retouched or utilized flake used on variable material (class 23). E: Utilized flake used on variable material (class 23). F: Bipolar core/punch/wedge/chisel (class 25).

a finished arrow point that was broken during use (use-phase 4). It is made of Knife River flint. The notching on this specimen is clearly oriented to the corner of the base, giving it a sharp, eared outline (Figure 122B).

The two notched arrow points are not easily accommodated within the Small Side-Notched Point System of the Northern Plains (Kehoe 1966, 1973). The notching low on the base suggests an affinity with either the Avonlea or Prairie Side-Notched types, but points from Sitting Buzzard lack the fine flaking that is characteristic of the Avonlea form. Considering this, they are both assigned to the general Prairie Side-Notched type. The corner-notched base fragment most closely resembles the High River Small Corner-Notched variety of this type (Kehoe 1973:58). The unfinished arrow point cannot be assigned to a more specific variety. The estimated age of Prairie Side-Notched points (ca. A.D. 800) indicates a late Plains Woodland affiliation. The date of occupation of the late Plains Woodland component at Sitting Buzzard is estimated at A.D. 600-1000 based on the late Plains Woodland time frame in the Lake Sharpe area. The following measurements were recorded for the two notched specimens:

Computer Number: 030001 (use-phase 4; Figure 122B)
Weight: 0.3 g
Maximum Length: Unknown (ca. 20 mm?)
Maximum Thickness: 2.0 mm
Maximum Blade Width: 15.4 mm
Maximum Base Width: 13.3 mm
Distance to Center of Notches from Base: 2.6 mm

Computer Number: 030003 (use-phase 2; Figure 122C)
Weight: 0.6 g
Maximum Length: 17.6 mm
Maximum Thickness: 4.2 mm
Maximum Blade Width: 12.3 mm
Maximum Base Width: 8.3 mm
Distance to Center of Notches from Base: 2.0 mm

Chipped Stone Flaking Debris

Chipped stone flaking debris from the Sitting Buzzard test excavations consists of a mere 27 G3 sized pieces. Virtually all of the flaking debris was recovered from late Plains Woodland contexts in Tests 3 and 4. Post-Contact Coalescent and unknown prehistoric contexts yielded only one flake apiece, both of which came from Test 4 (Table 86). The flaking debris sample is too small and biased for a precise assessment of the chipped stone tool technological operations performed at the site on the basis of size grade data. The near total absence of flaking debris in the Post-Contact Coalescent assemblage may be another indication of a deteriorating chipped stone tool technology among the protohistoric Plains Villagers of the area, similar to that proposed for the Post-Contact Coalescent component at Ghost Lodge. The presence of only G3 flaking debris in the late Plains Woodland sample suggests an emphasis on the maintenance and manufacture of small chipped stone tool forms, which is consistent with the limited stone tool data.

Table 86. Chipped Stone Flaking Debris Size Grade Data by Test Unit and Component, Sitting Buzzard Site (39ST122).

Component/ Test Unit		Size Grade Grade 1	Grade 2	Grade 3	Total
Post-Contact Coalescent					
4	n	-	-	1	1
	%	-	-	100.0	100.0
Unknown					
4	n	-	-	1	1
	%	-	-	100.0	100.0
Late Plains Woodland					
3	n	-	-	13	13
	%	-	-	100.0	100.0
4	n	-	-	12	12
	%	-	-	100.0	100.0
Subtotal	n	-	-	25	25
	%	-	-	100.0	100.0
Total	n	-	-	27	27
	%	-	-	100.0	100.0

Flaking debris lithic raw material type data for the late Plains Woodland component are presented in Table 87. The range of raw materials in the flaking debris sample from this component is very similar to that identified in the chipped stone tools. However, the flaking debris sample is clearly dominated by nonlocal materials (68.0%), particularly Flattop chalcedony (56.0%). This is unusual and may reflect an emphasis on the manufacture of small patterned tool forms such as arrow points. The relatively high percentage of small thin patterned bifaces (arrow points) in the late Plains Woodland tool sample (42.9%) lends additional support to this interpretation. The single G3 flake assigned to the Post-Contact Coalescent component is smooth gray Tongue River silicified sediment, while the lone G3 flake attributed to the unknown prehistoric component is coarse yellow Tongue River silicified sediment.

Table 87. Chipped Stone Flaking Debris Raw Material Type Data by Size Grade, Late Plains Woodland Component, Sitting Buzzard Site (39ST122).

Raw Material Type		Size Grade			Total	
		Grade 1	Grade 2	Grade 3	n	%
Local Resource Group						
08/09/10 Various Chalcedonies		-	-	8	8	32.0
Northern Resource Group						
01 Smooth Gray TRSS		-	-	1	1	4.0
28 Knife River Flint		-	-	2	2	8.0
Western Resource Group						
07 Flattop Chalcedony		-	-	14	14	56.0
Subtotal, Nonlocal Resources		-	-	17	17	68.0
Total	n	-	-	25	25	100.0
	%	-	-	100.0	100.0	

Much of the Flattop chalcedony in late Plains Woodland flaking debris sample appears to be the dark colored variety that is found in certain quarry sites in the Big Badlands area of southwestern South Dakota (e.g., Ahler 1977a:136; Nowak and Hannus 1985). Specimens of the more typical, lighter colored varieties of Flattop Chalcedony are also represented. The dark variety of Flattop chalcedony has been named Scenic chalcedony by Nowak and Hannus (1985:106-107). Smaller sized pieces of this material that lack cortex are difficult to distinguish from Knife River flint (Nowak and Hannus 1981). Comparative samples of Knife River flint and Scenic chalcedony were used as an aid in distinguishing between these two visually similar lithic types, and it is believed that the identifications reported here are essentially correct.

Fire-Cracked Rock

Very little fire-cracked rock (FCR) was recovered from the test excavations at Sitting Buzzard. A mere 74 g of G2-3 sized FCR is present in the collection. Of this amount, 72 g was found in late Plains Woodland contexts in Tests 3 and 4, and the remaining 2 g was found in a Post-Contact Coalescent context in Test 2 (Table 88). Most of the FCR from the site is granitic.

Table 88. Fire-Cracked Rock Size Grade Data by Test Unit and Component, Sitting Buzzard Site (39ST122).

Component/ Test Unit		Size Grade (grams) Grade 1	Grade 2	Grade 3	Total
Post-Contact Coalescent					
2	wt	-	-	2	2
	%	-	-	100.0	100.0
Late Plains Woodland					
3	wt	-	11	11	22
	%	-	50.0	50.0	100.0
4	wt	-	31	19	50
	%	-	62.0	38.0	100.0
Subtotal	wt	-	42	30	72
	%	-	58.3	41.7	100.0
Total	wt	-	42	32	74
	%	-	56.8	43.2	100.0

Other Artifacts

Other artifacts recovered from the test excavations at Sitting Buzzard include small quantities of recent metal, recent glass, burned earth, and charcoal (Table 89). A few pieces of G2-3 sized burned earth were found in both Post-Contact Coalescent and late Plains Woodland contexts. Only 1 g of G3 charcoal is present in the site collection; it is from a Post-Contact Coalescent context in Test 2.

The recent metal and glass in the site collection offers a difficult interpretive problem. It consists of a rusted fence staple, a small (G3) piece of amorphous rusted sheet iron, and four small (G3) fragments of flat glass. None of the glass shows obvious signs of tool use. The recent metal and glass are believed to derive from the sporadic use of the site by contemporary Euroamericans. With the exception of one piece of glass, all of this material was found in the upper 10 cm of Test 4 in a somewhat mixed association that includes one small (G3) Post-Coalescent body sherd. Two other body sherds were found from 10-20 cm in Test 4 with no associated Euroamerican materials. The other piece of glass was found from 30-40 cm sd in a Post-Contact Coalescent context in Test 3. It could have reached this

Table 89. Data on Other Artifacts by Test Unit and Component, Sitting Buzzard Site (39ST122).

Component/ Test Unit		Recent Metal	Recent Glass		Burned Earth (g)	Charcoal/ Wood (g)
<u>Recent, Historic</u>						
4	n	2	3	wt	-	-
<u>Post-Contact Coalescent</u>						
2	n	-	-	wt	6	1
3	n	-	(1)*	wt	-	-
5	n	-	-	wt	2	-
Subtotal	n	-	(1)*	wt	8	1
<u>Late Plains Woodland</u>						
3	n	-	-	wt	3	-
4	n	-	-	wt	2	-
Subtotal	n	-	-	wt	5	-
Total	n	2	4	wt	13	1

*Probably vertically displaced from the recent (historic) component.

depth by vertical displacement from the surface, or it could actually be a Post-Contact Coalescent artifact. Although these seemingly recent artifacts are attributed to a very ephemeral late historic component, only the fence staple would be out of place in a Post-Contact Coalescent assemblage. Therefore, it is not possible to conclusively determine the actual derivation of most of this material.

Vertebrate Fauna

Vertebrate fauna remains recovered from the test excavations at Sitting Buzzard total 583 g of G1-3 unmodified bone debris, of which 71 g shows evidence of burning. This amount includes 229 g from Post-Contact Coalescent contexts, 63 g from contexts assigned to the unknown prehistoric component, and 269 g from late Plains Woodland contexts (Table 90). An additional 22 g of bone debris is from various ephemeral contexts. Most of the burned bone was found in the late Plains Woodland zone in Test 3. The sample from the site contains only a few potentially identifiable G1-3 specimens. No modified bone (bone tools) is present in the assemblage.

The identified bone from the site is considered in detail in Appendix B (Wheeler, this report). Only the general characteristics of the collection are considered here. Identified elements from the Post-Contact component include bison and pronghorn. The only identified specimen that relates to the late Plains Woodland component is a cottontail skull fragment.

Artifact Distributions and Densities

Data on the distribution and density of major artifact classes at Sitting Buzzard are presented by component in Table 91. Quantities of artifacts are stated according to number or weight per square meter ($n/wt/m^2$) of excavated area for each test unit and component, as well as for the site as a whole. The late Plains Woodland component produced the highest artifact densities for all classes of material, with the exception of ceramics which are restricted to the Post-Contact Coalescent component. The limited testing conducted at the site indicates that most Post-Contact artifacts are located in the vicinity of Test 2. Late Plains Woodland artifacts are confined to the knoll area surrounding Tests 3 and 4. The few artifacts assigned to the unknown prehistoric component are also restricted to the knoll area. The generally low artifact densities that are recorded for the site indicate that its components represent low intensity, short-term occupations.

Discussion and Conclusions

Significant archeological components identified at the Sitting Buzzard site include brief occupations by small groups of people affiliated with (1) the Plains Village tradition, Post-Contact Coalescent variant, and (2) the late Plains Woodland tradition. A component of unknown prehistoric cultural affiliation that is intermediate in age to the two identified components is also potentially present. The Post-Contact Coalescent component is attributed to the Bad River phase, which is considered to be protohistoric Arikara (Hoffman and Brown 1967; Lehmer 1971; Lehmer and Jones 1968). The limited technological diversity exhibited by the artifact samples suggests these occupations served some special purpose or function. Available data are insufficient to positively assign the site components to recognized settlement types. The Post-Contact component could represent either a field camp or a location (specialized activity area). The late Plains Woodland component may have been a field camp or a station (information gathering site). The unknown

Table 90. Unmodified Bone Size Grade Data by Test Unit and Component, Sitting Buzzard Site (39ST122).

Component/ Test Unit		All Bone (grams)				Burned Bone (grams)			
		G1	G2	G3	Total	G1	G2	G3	Total
Post-Contact Coalescent									
2	wt	186	5	24	215	-	-	2	2
	*%	86.5	2.3	11.2	100.0	-	-	8.3	0.9
4	wt	-	-	1	1	-	-	-	-
	%	-	-	100.0	100.0	-	-	-	-
5	wt	-	9	4	13	-	-	-	-
	%	-	69.2	30.8	100.0	-	-	-	-
Subtotal	wt	186	14	29	229	-	-	2	2
	%	81.2	6.1	12.7	100.0	-	-	6.9	0.9
Unknown									
3	wt	-	7	1	8	-	-	-	-
	*%	-	87.5	12.5	100.0	-	-	-	-
4	wt	10	28	17	55	-	-	2	2
	%	18.2	50.9	30.9	100.0	-	-	11.8	3.6
Subtotal	wt	10	35	18	63	-	-	2	2
	%	15.9	55.6	28.6	100.1	-	-	11.1	3.2
Late Plains Woodland									
3	wt	64	56	94	214	-	15	48	63
	*%	29.9	26.2	43.9	100.0	-	26.8	51.1	29.4
4	wt	5	27	23	55	-	-	3	3
	%	9.1	49.1	41.8	100.0	-	-	13.0	5.5
Subtotal	wt	69	83	117	269	-	15	51	66
	%	25.6	30.9	43.5	100.0	-	18.1	43.6	24.5
Total	wt	265	132	164	561	-	15	55	70
	%	47.2	23.5	29.2	99.9	-	11.4	33.5	12.5

*Burned bone percentages are stated as a product of the weights of all bone.

Table 91. Major Prehistoric Artifact Class Distribution and Density Data by Test Unit and Component, Sitting Buzzard Site (39ST122).

Component/ Test Unit	Rim Sherds	Body Sherds	Stone Tools	Flaking Debris	FCR (g)	Unmodified Bone (g)
Post Contact Coalescent						
1	-	-	-	-	-	-
2	3	46	-	-	2	215
3	-	2	-	-	-	-
4	1	2	-	1	-	1
5	-	4	-	-	-	13
6	-	-	-	-	-	-
Subtotal	4	54	-	1	2	229
n/wt/m^2	0.7	9.0	-	0.2	0.3	38.2
Unknown						
3	-	-	-	-	-	8
4	-	-	3	1	-	55
Subtotal	-	-	3	1	-	63
n/wt/m^2	-	-	1.5	0.5	-	31.5
Late Plains Woodland						
3	-	-	4	13	22	214
4	-	-	3	12	50	55
Subtotal	-	-	7	25	72	269
n/wt/m^2	-	-	3.5	12.5	36.0	134.5
Total	4	54	10	27	74	561
n/wt/m^2	0.7	9.0	1.7	4.5	12.3	93.5

prehistoric component is far too ephemeral to permit any sort of functional interpretation.

The Post-Contact occupants of the site probably consisted of a special-purpose task group that was operating out of some nearby village. Low bone debris densities and the absence of semipermanent dwellings preclude a hunting camp interpretation similar to that reported at the Fire Heart Creek site (Lehmer 1966). The circular depression (Feature 1), which was initially thought to mark the remains of a conical earthlodge or "hunting lodge", proved to be a natural feature produced by subsurface erosion. It is unclear what specific resources might have been exploited from the site by the inferred Post-Contact task group, but the location of the site suggests that various bottomland resources are a likely possibility. The proximity of a number of permanent villages to the Sitting Buzzard site may have obviated the the need to establish a temporary residential base at this location. The Bloody Hand site (39ST230) is the closest permanent village to Sitting Buzzard. Bloody Hand is located approximately 4 km downstream from the Sitting Buzzard location, and it is believed to represent a Post-Contact occupation (Steinacher 1981; Steinacher and Toom 1985; Toom and Picha 1984). However, a direct link between the Bloody Hand and Sitting Buzzard occupations can only be speculated at this time. Further investigations are required to explore the relationship of the Post-Contact component at Sitting Buzzard with other known and presumed Post-Contact occupations in the area, including that at the Ghost Lodge site.

A field camp interpretation for the late Plains Woodland component seems to be the most plausible alternative in view of the apparent absence of any other nearby residential bases from which Woodland task groups might have operated. In this regard, the site may have functioned as a temporary residential base for the extraction of local resources. On the other hand, the site could have merely served as a brief stopover point on the way to some other location. Whatever the case, the refitting and maintenance of projectile weapons (arrows) was a conspicuous activity of the late Plains Woodland occupants of the site. Perhaps this reflects a group of hunters passing the time at a station while they were waiting for indications of game.

Beyond these few speculations, little else can be said about the nature of the Post-Contact Coalescent and late Plains Woodland components at Sitting Buzzard. Nevertheless, the site does contain artifactual remains that relate to intriguing and poorly understood aspects of the lifeways of Plains Village and Plains Woodland peoples. Additional investigations at the site would surely provide important information on the settlement-subsistence practices of these archeological cultures.

XIII. RADIOCARBON DATES

Introduction

Eleven radiocarbon (C-14) dating samples were submitted for analysis to the Radiocarbon Laboratory, Department of Anthropology, University of California, Riverside (Table 92). Six samples (UCR-2308-2313) were collected from two Initial Middle Missouri houses at the Antelope Dreamer site (39LM146); two samples (UCR-2314-2315) relate to an Initial Middle Missouri house at the Stony Point site (39ST235); and two samples (UCR-2316-2317) are from a Post-Contact Coalescent house at the Ghost Lodge site (39ST120). The final sample (UCR-2318), a large bison bone element, was recovered from the colluvial (clay) depositional unit in the stream cutbank of the western bench at Ghost Lodge. The bone sample is thought to have been deposited as a result of natural processes; it is dated to provide an age estimate on the deposition of the colluvial unit at Ghost Lodge for purposes of eventual geomorphological and paleoenvironmental interpretation.

Averaging and calibration of the Lake Sharpe radiocarbon dates reported here was accomplished using a computer program developed by the Quaternary Isotope Laboratory, University of Washington, Seattle (Radiocarbon Calibration Program 1987, Rev. 1.3). The calibration curve is based on bi-decadal data compiled by the the Seattle and Belfast laboratories, which is the accepted international standard for the period from A.D. 1950-500 B.C. (Stuiver and Pearson 1986). The standard deviations (standard errors) reported for the radiocarbon ages are those quoted by the laboratory; they have not been adjusted by an "error multiplier" based on overall reproducibility (cf. Stuiver and Pearson 1986:807-808). All of the radiocarbon dates are accepted at face value without any specific statistical evaluation. The dates were determined in the conventional manner using the Libby half-life, and all have been normalized to -25 o/oo C-13 values with reference to the PDB standard (cf. Taylor 1987).

Antelope Dreamer Series

Three of the six radiocarbon dates from the Initial Middle Missouri village component at Antelope Dreamer were run on burned corn cob fragments associated with a concentration of burned botanical remains (F107) found on the floor of House 11 in Test 5. The corn cobs have been identified as *Zea mays* (Appendix A; Van Ness, this report). The C-13 values of -10.40 (UCR-2308), -10.31 (UCR-2309), and -9.99 (UCR-2310) per mil that were obtained for these samples are consistent with the corn identification and the fact that corn is a C-4 (Slack-Hatch cycle) plant (Taylor 1987:48). Corn has not enjoyed a very favorable reputation as an accurate C-14 sample material in the past. However, recent work by Creel and Long (1986) indicates that corn "is at least as reliable as other materials for carbon-14 dating" when the raw laboratory ages are properly normalized and calibrated. Normalization is a correction factor that accounts for isotopic fractionation differences between C-3 plant sample materials such as wood and C-4 plant sample materials such as corn (Taylor 1987:48). The radiocarbon ages for the three corn dates from

Table 92. Sample Data for Radiocarbon Dates from Selected Archeological Sites, Lake Sharpe Testing Project, WCRM, 1987.

Site and Lab Number	Association	Material (Weight)	Remarks
Antelope Dreamer (39LM146) Series			
UCR-2308	F107, House 11, Floor	Burned Corn Cobs (30 g)	Species: *Zea mays*; C-13 -10.40 per mil. Split sample with UCR-2309 and 2310.
[non-normalized, uncalibrated laboratory age of 430±50 C-14 years B.P.]			
UCR-2309	F107, House 11, Floor	Burned Corn Cobs (30 g)	Species: *Zea mays*; C-13 -10.31 per mil. Split sample with UCR-2308 and 2310.
[non-normalized, uncalibrated laboratory age of 500±50 C-14 years B.P.]			
UCR-2310	F107, House 11, Floor	Burned Corn Cobs (30 g)	Species: *Zea mays*; C-13 -9.99 per mil. Split sample with UCR-2308 and 2309.
[non-normalized, uncalibrated laboratory age of 480±50 C-14 years B.P.]			
UCR-2311	F100 (Post), House 15, Floor	Burned Wood (20 g)	Species: *Juniperus*; C-13 -22.88 per mil. Outer rings of burned post butt.
[non-normalized, uncalibrated laboratory age of 835±90 C-14 years B.P.]			
UCR-2312	F103 (Post), House 15, Floor	Burned Wood (18 g)	Species: *Juniperus*; C-13 -21.42 per mil. Outer rings of burned post butt.
[non-normalized, uncalibrated laboratory age of 740±80 C-14 years B.P.]			
UCR-2313	F101 (Post) Hcuse 15, Floor	Burned Wood (27 g)	Species: *Populus*; C-13 -22.54 per mil. Outer rings of burned post butt. (Misidentified? -- cf. *Juniperus*)
[non-normalized, uncalibrated laboratory age of 780±80 C-14 years B.P.]			

Table 92. Sample Data for Radiocarbon Dates from Selected Archeological Sites, Lake Sharpe Testing Project, WCRM, 1987 (Continued).

Site and Lab Number	Association	Material (Weight)	Remarks
Stony Point (39ST235) Series			
UCR-2314	House A, Roof-fall/Floor Zone	Wood Charcoal (21 g)	Species: Populus, possibly mixed; C-13 -26.50 per mil. Composite sample from cutbank exposure, split with UCR-2315.
[non-normalized, uncalibrated laboratory age of 710±60 C-14 years B.P.]			
UCR-2315	House A, Roof-fall/Floor Zone	Wood Charcoal (21 g)	Species: Populus, possibly mixed; C-13 -26.36 per mil. Composite sample from cutbank exposure, split with UCR-2314.
[non-normalized, uncalibrated laboratory age of 860±50 C-14 years B.P.]			
Ghost Lodge (39ST120) Series			
UCR-2316	F101 (Hearth), House 2, Floor	Wood Charcoal (12.5 g)	Species: Fraxinus, possibly mixed; C-13 -24.87 per mil. Composite sample from hearth, split with UCR-2317.
[non-normalized, uncalibrated laboratory age of <150 C-14 years B.P.]			
UCR-2317	F101 (Hearth) House 2, Floor	Wood Charcoal (12.5 g)	Species: Fraxinus, possibly mixed; C-13 -25.36 per mil. Composite sample from hearth, split with UCR-2316.
[non-normalized, uncalibrated laboratory age of 180±80 C-14 years B.P.]			
UCR-2318	Colluvial Clay, Western Bench	Bone Element (317 g)	Species: B. bison; C-13 -15.76 per mil. Juvenile, right metatarsal, whole and complete.
[non-normalized, uncalibrated laboratory age of 2190±70 C-14 years B.P.; total acid-soluble organic fraction of the bone]			

Antelope Dreamer have been normalized to -25 o/oo C-13 values, which represent the C-3 plant standard for radiocarbon dates (Taylor 1987:121-122).

The other three radiocarbon dates were run on burned wood samples comprised of the outer rings of three peripheral posts found protruding from the floor of House 15. Two of these posts are identified as juniper (Juniperus) (F100, UCR-2311; F103, UCR-2312). The other post is identified as cottonwood (Populus) (F101, UCR-2313) (Appendix A; Van Ness, this report). The identification of F101 (UCR-2313) as cottonwood is questioned here because all three samples produced virtually identical C-13 values (ca. -22 per mil) and other samples identified as cottonwood (UCR-2314 and UCR-2315) yielded somewhat higher C-13 values (ca. -26 per mil) (cf. Table 92). In addition, while taking cuttings for identification from the post butts, all three posts seemed to be of a very hard, dense wood like juniper. It is believed that a small number of outer rings from these posts may have been lost to burning, but any potential error introduced from this source is thought to be minimal.

The radiocarbon dates for the Initial Middle Missouri village component at Antelope Dreamer are presented in Table 93. The dates show a good concordance of values, particularly within the group run on corn and the group run on burned wood. On average, the corn dates are some 50 years younger than the wood dates. This difference is thought to relate primarily to the characteristics of the different sample materials themselves (i.e., corn versus wood). For example, the wood dates could be considered to be somewhat too old with respect to the actual age of the occupation because some of the outer rings may have been burned away, and because the occupants of the site may have used relatively old (dead) wood as a construction material. On the other hand, the corn dates could be viewed as somewhat too young in regard to the actual age of the occupation because of the greater correction factors required for corn, and past perceptions by archeologists that corn yields dates that are generally younger than comparable wood dates (cf. Creel and Long 1986:826-827). Creel and Long (1986) have done a great deal to dispel this archeological misconception about C-14 dates based on corn. It is my opinion that properly corrected dates based on corn are potentially a more accurate reflection of the age of a site occupation because corn is a short-growth plant (i.e., single season) that is directly related to human habitation. Wood, on the other hand, is a long-growth plant that need not be directly related to human activities and, therefore, will not necessarily yield an or the most accurate age for a particular archeological component. Be this as it may, it also my opinion that all six samples from Antelope Dreamer should yield reasonably accurate age estimates for the Initial Middle Missouri village component. While it is interesting to speculate on the various nuances of C-14 samples relative to "dated events" and "target events" (Dean 1978:226-228), at the present time, the best C-14 age estimate for the Initial Middle Missouri village at Antelope Dreamer will most likely consist of an average of all six dates. Therefore, based on the calibrated (cal.) weighted average value of the six normalized radiocarbon ages, the occupation of the Initial Middle Missouri village at the Antelope Dreamer site is estimated to have taken place during the late A.D. 1200s (ca. cal. A.D. 1270) (Table 93).

Table 93. Radiocarbon Dates for the Initial Middle Missouri Village Component at the Antelope Dreamer Site (39LM146). Calibration data are from Stuiver and Pearson (1986).

Lab Number	Laboratory C-14 Age*	Calibrated Age Ranges and Intercepts		
		One Sigma Range	Two Sigma Range	Intercepts
Corn Samples				
UCR-2308	660±50 B.P.	A.D. 1277-1312 1352-1384	A.D. 1260-1400	A.D. 1287
	Maximum Range	A.D. 1277-1384	A.D. 1260-1400	
UCR-2309	735±50 B.P.	A.D. 1255-1282	A.D. 1218-1298 1367-1372	A.D. 1271
	Maximum Range	A.D. 1255-1282	A.D. 1218-1372	
UCR-2310	720±50 B.P.	A.D. 1262-1285	A.D. 1225-1307 1358-1380	A.D. 1275
	Maximum Range	A.D. 1262-1285	A.D. 1225-1380	
Corn Average	705±29 B.P.	A.D. 1271-1284	A.D. 1263-1292	A.D. 1278
	Maximum Range	A.D. 1271-1284	A.D. 1263-1292	
Wood Samples				
UCR-2311	870±90 B.P.	A.D. 1030-1260	A.D. 990-1280	A.D. 1169
	Maximum Range	A.D. 1030-1260	A.D. 990-1280	
UCR-2312	800±80 B.P.	A.D. 1166-1275	A.D. 1030-1290	A.D. 1245
	Maximum Range	A.D. 1166-1275	A.D. 1030-1290	
UCR-2313	820±80 B.P.	A.D. 1159-1270	A.D. 1020-1290	A.D. 1225
	Maximum Range	A.D. 1159-1270	A.D. 1020-1290	
Wood Average	827±48 B.P.	A.D. 1167-1260	A.D. 1045-1098 1115-1147 1152-1273	A.D. 1222
	Maximum Range	A.D. 1167-1260	A.D. 1045-1273	

*All values are normalized to the C-13 -25 o/oo PDB standard.

Table 93. Radiocarbon Dates for the Initial Middle Missouri Village Component at the Antelope Dreamer Site (39LM146) (Continued). Calibration data are from Stuiver and Pearson (1986).

Lab Number	Laboratory C-14 Age*	Calibrated Age Ranges and Intercepts		
		One Sigma Range	Two Sigma Range	Intercepts
Component Average,	738±25	A.D. 1264-1277	A.D. 1253-1282	A.D. 1270
All Dates	Maximum Range	A.D. 1264-1277	A.D. 1253-1282	

*All values are normalized to the C-13 -25 o/oo PDB standard.

Stony Point Series

The Stony Point site (39ST235) is located in the upper portion of the Lake Sharpe project area on the west bank directly across from the Rousseau Area (Medicine Knoll Creek). The site is a permanent earthlodge village containing components attributed to the Post-Contact Coalescent and Initial Middle Missouri variants (Lehmer 1971; Steinacher 1981; Steinacher and Toom 1985). Stony Point was not scheduled for testing as part of these investigations. However, during the course of the testing project, the opportunity was present to collect a charcoal sample from what was presumed to be an Initial Middle Missouri earthlodge eroding from the Lake Sharpe cutbank at the site. The sample consists of general wood charcoal fragments that were picked from the rooffall/floor zone of the house exposure, herein designated House A. A larger piece of charcoal in this composite sample was identified as cottonwood (Populus) (Appendix A; Van Ness, this report). Other species of wood may be represented in the sample in addition to cottonwood.

Permission was obtained from the USACE technical officer (Richard Berg) to run two C-14 dates from the House A charcoal sample from Stony Point using radiocarbon dating funds available through this project. The two C-14 dates from the aggregate charcoal sample from House A are presented in Table 94. Both of the dates for House A fall within the Initial Middle Missouri time frame, confirming that it is indeed an Initial Middle Missouri structure. Considered together, the two age estimates on the House A sample are not in particularly good agreement, but this is not unexpected considering the generic nature of the sample, which could (and probably does) represent a variety of wood remains of somewhat different ages. Nevertheless, the average of the two normalized dates is thought to be a general indication of the age of the Initial Middle Missouri component at the site. Calibration of the average C-14 age suggests a date of occupation during the mid-A.D. 1200s (ca. cal A.D. 1260) for the Initial Middle Missouri village at Stony Point (Table 94). If one chooses to consider that some relatively old wood in UCR-2315 accounts for its greater age, then it is conceivable that the younger date (UCR-2314) is a more accurate reflection of the age of the Initial Middle Missouri village occupation at Stony Point, which would place it in the late A.D. 1200s (ca. cal. A.D. 1280).

Table 94. Radiocarbon Dates for the Initial Middle Missouri Village Component at the Stony Point Site (39ST235). Calibration data are from Stuiver and Pearson (1986).

Lab Number	Laboratory C-14 Age*	Calibrated Age Ranges and Intercepts		
		One Sigma Range	Two Sigma Range	Intercepts
UCR-2314	685±60 B.P.	A.D. 1268-1304 1361-1377	A.D. 1230-1400	A.D. 1282
	Maximum Range	A.D. 1268-1377	A.D. 1230-1400	
UCR-2315	840±50 B.P.	A.D. 1162-1253	A.D. 1040-1270	A.D. 1216
	Maximum Range	A.D. 1162-1253	A.D. 1040-1270	
Component Average	777±38 B.P.	A.D. 1227-1270	A.D. 1192-1279	A.D. 1261
	Maximum Range	A.D. 1227-1270	A.D. 1192-1279	

*All values are normalized to the C-13 -25 o/oo PDB standard.

Ghost Lodge Series

Two radiocarbon dates were run on a general wood charcoal sample obtained from the central hearth (F101) of House 2 at the Ghost Lodge site. A large piece of charcoal from the sample is identified as ash (Fraxinus) (Appendix A; Van Ness, this report). Other species of wood may also be represented in the sample. Both C-14 ages are within the modern range, which is expected of a late Post-Contact Coalescent (Bad River phase) component. UCR-2316 yielded a normalized laboratory C-14 age of <150 years B.P., while UCR-2317 produced an age of 180±80 years B.P. Averaging and calibration of the two dates is only possible if a value of 150±50 is assumed for UCR-2316 (Table 95). Such an assumption is easily justified because it is widely held that Post-Contact Coalescent (Arikara) groups had abandoned the Lake Sharpe area (Big Bend region) by ca. A.D. 1780 and moved farther upriver, largely in response to the smallpox epidemic of 1780-1781 (Krause 1972:14-15; Lehmer 1971:170ff; Smith 1977:156; Wedel 1961:201-203). Thus, a date of occupation for the Post-Contact village component at Ghost Lodge that post-dates 150 B.P. (ca. A.D. 1800) can be safely ruled out. It is not possible to more precisely date the village occupation at Ghost Lodge within the general temporal limits of the Post-Contact Coalescent variant using C-14 data alone because present techniques lack the precision necessary to effectively segment such a narrow time frame (cf. Table 95). On the basis of all available temporal-cultural information, the occupation of the Post-Contact village at Ghost Lodge is estimated to have occurred during the late A.D. 1700s; a post-epidemic date somewhere between A.D. 1780-1795 is suggested. An actual date of occupation shortly after A.D. 1780 would seem to be the most likely possibility.

Table 95. Radiocarbon Dates for the Ghost Lodge Site (39ST120). Calibration data are from Stuiver and Pearson (1986).

Lab Number	Laboratory C-14 Age*	Calibrated Age Ranges and Intercepts		
		One Sigma Range	Two Sigma Range	Intercepts
Post-Contact Dates				
UCR-2316	<150 B.P.	A.D. 1666-1886 1911-1950 1952-1955	A.D. 1650-1955	A.D. 1683 1739 1805 1934 1955
	Maximum Range	A.D. 1666-1955	A.D. 1650-1955	
UCR-2317	175±80 B.P.	A.D. 1649-1889 1909-1955	A.D. 1516-1596 1620-1955	A.D. 1674 1749 1797 1943 1955
	Maximum Range	A.D. 1649-1955	A.D. 1516-1955	
Post-Contact Coalescent Component Average	157±42 B.P.	A.D. 1666-1701 1721-1822 1846-1871 1918-1955	A.D. 1653-1955	A.D. 1680 1742 1803 1937 1955
	Maximum Range	A.D. 1666-1955	A.D. 1653-1955	
Geologic Date				
UCR-2318	2340±70 B.P.	410-383 B.C.	760-682 B.C. 658-636 593-583 550-350 310-232	399 B.C.
	Maximum Range	410-383 B.C.	760-210 B.C.	

*All values are normalized to the C-13 -25 o/oo PDB standard. A C-14 age of 150±50 B.P. is assumed for UCR-2316 for purposes of calibration and averaging because an actual age of less than 150 years B.P. (ca. A.D. 1800) for the sample is highly unlikely (see text).

The third C-14 date from the Ghost Lodge Site (UCR-2318) was run on a bone sample collected from clayey colluvium exposed in the stream cutbank of the western bench (Table 95). This sample, which is identified as a right metatarsal from a B. bison juvenile, is believed to have been deposited in the colluvium as a result of natural processes. Interest in dating this specimen is primarily geologic, in that it should provide a general age for the deposition of the colluvial unit in the western bench, an event which could have important paleoenvironmental implications. The colluvial depositional unit in the western bench is broadly interpreted as a 2Bbk horizon; it is thought to correspond to similar units in the eastern bench, which are also formed principally in colluvial clay. UCR-2318 yielded a normalized laboratory C-14 age of 2340±70 years B.P. Interception of the calibration curve by this age occurs at a calendar date of 399 B.C. Maximum calibrated date ranges at the one sigma interval fall between 410-383 B.C., while maximum calibrated date ranges at the two sigma interval extend from 760-210 B.C. (Table 95). On the basis of these data, it is concluded that the colluvial unit (now a 2Bbk horizon) in the western bench at Ghost Lodge was deposited sometime during the early to middle part of the first century B.C. (ca. 400 cal. B.C.).

XIV. SYNTHESIS AND INTERPRETATION

Introduction

This section attempts to address in general terms the scientific research goals and topics outlined in Section III to the extent possible by using the data generated from the testing project. Obviously, these data are far too limited in scope to allow anything approaching a comprehensive treatment of the identified topics. Nonetheless, they do reveal some useful insights (or speculations) into the late prehistoric cultures of the Lake Sharpe area. Only the highlights of the scientific research findings are presented here. The reader is referred to the individual site report sections for more detailed discussions of the data.

Chronology and Culture History

The archeological investigations reported here generated significant chronological data on the Initial Middle Missouri variant in the form of two new series of radiocarbon dates. Radiocarbon dates are also available for the Post-Contact Coalescent component at the Ghost Lodge site, but these are not considered to be particularly significant because such recent dates cannot be interpreted with any precision relative to the age of the archeological taxa in question. In terms of general culture history, the identification of late Plains Woodland sites in the project area is considered to be significant. These topics, with the exception of the Post-Contact radiocarbon series from Ghost Lodge, are discussed in greater detail below.

Initial Middle Missouri Radiocarbon Dates

The radiocarbon dates for the Initial Middle Missouri village components at the Antelope Dreamer (39LM146) and the Stony Point (39ST235) sites are an important contribution toward a better understanding of the cultural chronology of the Plains Village tradition in the Lake Sharpe area and beyond. Despite the existence of a number of C-14 dates for Initial Middle Missouri components (cf. Thiessen 1977), it is my opinion that the absolute chronology of the variant is not well founded and it is still open to significant adjustment. (This same statement can be made for the other prehistoric Plains Village variants in the Middle Missouri subarea.)

The problem with many if not most existing C-14 dates, as I see it, relates to four factors which are critical to accurate absolute dating of any kind: (1) sample selection by the archeologist, (2) laboratory procedures, (3) adequate numbers of dates for a particular component, and (4) adequate numbers of dated components. Most of the C-14 samples for the Initial variant were collected and assayed during the early years of C-14 dating while the technique was still new, and the various refinements that we take for granted today were practiced only sporadically or even not all. For example, laboratory sample pretreatment procedures to remove various contaminants were not routinely or comprehensively practiced during the early (experimental) years of C-14 dating. As late as 1980, at least one lab running dates on

Middle Missouri village and other samples was not pretreating their samples with sodium hydroxide to remove soil humates because of some concern over exchange with carbon dioxide during the pretreatment process. Sample pretreatment with both sodium hydroxide and hydrochloric acid to remove soil humate and carbonate contaminants is now routinely performed and considered to be absolutely necessary for reliable results (cf. Taylor 1987).

Sample selection by archeologists was also done without the care and understanding that are usually applied today. By way of example, Thiessen (1977:81) notes that certain dates from the Swanson site (39BR16) were run on inner rings from wooden posts, outer rings, and even ring samples that had been contaminated by paraffin. Detailed information on many other samples is all but lacking, and about all that a person can determine is that they consisted of "charcoal" from a particular site that is thought to relate to some component. It is obvious that a large number of the samples upon which our present Plains Village C-14 chronology is based were not selected or treated with the care that would be taken today given our present understanding of C-14 dating. Laboratory techniques and hardware related to C-14 dating have also been steadily improved over the years (cf. Taylor 1987), so it is not surprising to find that the earlier C-14 dates lack the precision expressed for dates that were run more recently on similar if not identical sample materials. While the available C-14 dates for the Initial Middle Missouri variant in the Big Bend region are not totally chaotic, a term which has been applied with good reason to certain dates for the Mill Creek Culture of northwestern Iowa (Butzer 1973:254), a good number do show significant inconsistencies that seem to be related to poor judgment in sampling, improper treatment of samples in the field, inadequate sample pretreatment in the lab, and/or laboratory problems of one sort or another.

Related to this problem of a basic lack of confidence in our "aging" C-14 chronology from a purely mechanical perspective are problems related to component sampling within variants and sample size for a particular dated component. Only relatively few village components of a given variant have actually been C-14 dated compared to those that were once available for study, and too few dates were run for many of those components that were dated. Take, for example, the Initial Coalescent variant. Lehmer (1971:112) identifies ten Initial Coalescent components in the Big Bend region. These are Arzberger (39HU6), DeGrey (39HU205), Denny (39HU224), Medicine Creek (39LM2), Black Partizan (39LM218), Useful Heart (39LM6), Farm School (39BF220), Talking Crow (39BF3), Crow Creek (39BF11), and 39LM82. Four additional components with definite or probable Initial Coalescent affiliation can be added to those listed by Lehmer, including Granny Two Hearts (39HU61), Leisher Ranch (39HU207), Arch (39HU229), and Whistling Elk (39HU242) (Steinacher and Toom 1984a). Of the fourteen identified Initial Coalescent components, only three have associated radiocarbon dates -- Whistling Elk (39HU242), Crow Creek (39BF11), and Arzberger (39HU6). This telling bit of information clearly points to the limited number and restricted distribution of available radiocarbon dates for the Initial Coalescent variant from a sampling perspective. Radiocarbon data from only three of a potential 14 components is an insufficient sample by any standards. Furthermore, Lehmer's (1971:114) estimated time frame for the Initial Coalescent variant (ca. A.D. 1400-1550) is based on only three C-14 dates -- two from Arzberger and one from Crow Creek. Such inadequate sampling of absolute chronological data is not unique to the Initial Coalescent variant; it is typical of all of the prehistoric Plains Village variants in the Middle Missouri subarea.

Without belaboring the point further, it seems clear to me that our C-14 based chronology of the Plains Village tradition is of generally poor quality and too limited in scope to be considered accurate and reliable. Thus, we should not feel too secure in our present perceptions of Plains Village culture history in the Middle Missouri subarea. Furthermore, it is absolutely necessary to obtain many additional, high quality C-14 dates from a number of appropriate Plains Village components before closing the book on this chapter of Middle Missouri prehistory.

Be this as it may, one can only work with the data at hand until additional dates become available. Average and single radiocarbon dates for Initial Middle Missouri components in the Big Bend and Bad-Cheyenne regions are listed from oldest to youngest in Table 96. Data from the Bad-Cheyenne region, located just upriver from the Big Bend region (Figure 3), is included here to increase sample size. The laboratory C-14 ages stated in Table 96 have been converted to calibrated (cal.) calendar dates according to Stuiver and Pearson (1986) using a computer program developed by the Quaternary Isotope Laboratory, University of Washington, Seattle (Radiocarbon Calibration Program 1987, Rev. 1.3). Averaging of multiple radiocarbon dates for a particular component was done internally by the computer program, which yields a weighted average. The stated standard deviations of the dates have not been adjusted by an "error multiplier" (cf. Stuiver and Pearson 1986:807-808).

The oldest date in the Big Bend/Bad-Cheyenne Initial Middle Missouri sequence (ca. cal. A.D. 960) is from the Jandreau site and the youngest date (ca. cal. A.D. 1414) is from Component B at the Pretty Head site (Table 96). A number of these dates can be eliminated from serious consideration because of the factors discussed above. All components having only single radiocarbon dates can be eliminated on principal because of their potential unreliability. The single dates associated with Components A and B at the Pretty Head site can also be eliminated on the grounds of unreliability due to their apparent stratigraphic reversal (i.e., Component B was expected to be older than Component A) (Thiessen 1977:79-80). The La Roche site Component C average should be dismissed as well because the actual association of the two dates upon which it is based is open to some question since the samples were initially thought to be from a Coalescent tradition context (Thiessen 1977:79). Finally, the two reported dates from the Sommers site are too disparate to be given any credibility. Another six dates run by Beta Analytic on materials from the Sommers village also exhibit wide variation and can contribute little to the much needed clarification of the age of the Initial Middle Missouri component at this site (T. L. Steinacher, personal communication 1987).

After eliminating dates from seven components on these grounds, we are left with a total of 10 components with multiple dates that can be interpreted with some degree of confidence (Table 96). The oldest of these components is Swanson (ca. cal. A.D. 1005) and the youngest is Jiggs Thompson B (ca. cal. A.D. 1285). This more conservative interpretation of the available data suggests that the Initial Middle Missouri variant dates from ca. cal. A.D. 1000-1300 in the Big Bend and Bad-Cheyenne regions of the Middle Missouri subarea. The newly acquired dates on the Initial Middle Missouri villages at the Antelope Dreamer and Stony Point sites that were first reported here (Section XIII) fall near the end of this general time frame, indicating that both villages are most likely late manifestations of the variant.

Table 96. Radiocarbon Dates for Initial Middle Missouri Components in the Big Bend and Bad-Cheyenne Regions. Radiocarbon data are from Thiessen (1977) and this report (Section XIII; sites 39LM146 and 39ST235). Calibration data are from Stuiver and Pearson (1986).

Site/Component Name (Number)	No. of Dates	Average or Single Lab C-14 Age	Calibrated Maximum One Sigma Range & Two Sigma Range	Calibrated Intercept(s)
Jandreau* (39LM225)	1	1100±150 B.P.	A.D. 770-1030 650-1250	A.D. 960
Swanson (39BR16)	12	1033±17 B.P.	A.D. 989-1014 979-1020	A.D. 1005
Cattle Oiler (39ST224)	5	957±36 B.P.	A.D. 1020-1153 1006-1165	A.D. 1032
Breeden A (39ST16)	3	927±36 B.P.	A.D. 1029-1163 1018-1197	A.D. 1044 1101 1114 1148 1151
Crow Creek* (39BF11)	1	900±100 B.P.	A.D. 1020-1250 960-1280	A.D. 1160
Fay Tolton (39ST11)	3	890±34 B.P.	A.D. 1045-1191 1030-1225	A.D. 1163
Langdeau (39LM209)	3	870±36 B.P.	A.D. 1064-1219 1037-1248	A.D. 1169
Arp (39BR101)	2	853±74 B.P.	A.D. 1044-1260	A.D. 1197
King (39LM55)	2	842±42 B.P.	A.D. 1164-1246 1044-1266	A.D. 1216
Dodd* (39ST30)	1	800±100 B.P.	A.D. 1160-1280 1020-1389	A.D. 1245
Stony Point (39ST235)	2	777±38 B.P.	A.D. 1227-1270 1192-1279	A.D. 1261
Antelope Dreamer (39LM146)	6	738±25 B.P.	A.D. 1264-1277 1253-1282	A.D. 1270
Jiggs Thompson B (39LM208)	2	670±85 B.P.	A.D. 1266-1394 1220-1420	A.D. 1285

Table 96. Radiocarbon Dates for Initial Middle Missouri Components in the Big Bend and Bad-Cheyenne Regions (Continued). Radiocarbon data are from Thiessen (1977) and this report (Section XIII; sites 39LM146 and 39ST235). Calibration data are from Stuiver and Pearson (1986).

Site/Component Name (Number)	No. of Dates	Average or Single Lab C-14 Age	Calibrated Maximum One Sigma Range & Two Sigma Range	Calibrated Intercept(s)
Pretty Head A* (39LM232)	1	650±140 B.P.	A.D. 1250-1420 1043-1480	A.D. 1290
Sommers* (39ST56)	2	646±88 B.P.	A.D. 1271-1402 1220-1430	A.D. 1291
La Roche C* (39ST9)	2	569±52 B.P.	A.D. 1305-1415 1280-1440	A.D. 1398
Pretty Head B* (39LM232)	1	520±80 B.P.	A.D. 1317-1443 1280-1490	A.D. 1414

*Component dates eliminated from consideration due to potentially erroneous and/or unreliable results (see text discussion).

Late Plains Woodland Components

The identification of late Plains Woodland components at the Windy Mounds (39LM149) and the Sitting Buzzard (39ST122) sites is also an important finding from a cultural-historical perspective. On the basis of a few diagnostic artifacts (arrow points), both sites are thought to be of roughly the same age and relatable to the same cultural manifestation. While additional evidence positively linking the two sites is desirable, I believe it is safe to conclude that the Sitting Buzzard component has the potential to be a habitation site that corresponds to some degree with a burial mound site, namely Windy Mounds. Such a linkage has been essentially lacking up to this point, and the two sites have a tandem research potential that goes well beyond what either alone could offer.

That fact that these two sites can be identified as "late Plains Woodland" is also regionally significant. A few confirmed and suspected Sonota complex (early Plains Woodland) habitation sites and/or activity areas are represented in the project area (Steinacher and Toom 1984a; Toom 1989b), but only recently have hitherto unknown late Plains Woodland cultural manifestations been recognized (this report). Much additional research is needed into the Plains Woodland tradition in the area, and the Windy Mounds and Sitting Buzzard sites will be important resources in such endeavors, especially those focusing on late period manifestations and the characteristics of the local Plains Woodland to Plains Village transition.

Cultural Reconstruction

Cultural reconstruction is a very broad topic that any site with an identified component and an inferred function can contribute toward. The significant aspects of each site in regard to cultural reconstruction, especially settlement-subsistence patterns, is discussed in some detail below by cultural tradition and function.

Plains Village Tradition Locations

Two Plains Village components at two different sites are inferred to have functioned as locations. These are the Extended Coalescent component at the West Bend site (39HU83) and the Post-Contact Coalescent component at the Sitting Buzzard site (39ST122).

The West Bend Location. The West Bend site is interpreted as an Extended Coalescent specialized activity location. The site may also have functioned as a field camp. Available evidence indicates that the principal activity conducted at the site by Extended Coalescent task groups was the final processing of bison from nearby kill/butchering sites. There is also some evidence that the collection of plant resources was another important activity. It comes as no surprise to find that such sites were a part of local Extended Coalescent settlement-subsistence patterns. What is surprising is to find that few sites of this kind have been recorded in the project area, which makes the West Bend site and others like it essentially unique archeological resources. It is speculated elsewhere that the rarity of Plains Village location sites of any age is probably more apparent than real and related to past survey biases, their relatively low archeological visibility, and the inundation of Missouri bottomlands where many of these sites may have been located (Toom 1989b). Whatever the explanation, it is thought that the location was a functional site type of considerable importance in overall Plains Village settlement-subsistence patterns, despite the low numbers of recorded sites of this kind.

The Sitting Buzzard Location. One of the significant archeological components identified at the Sitting Buzzard site represents a brief occupation by a small group affiliated with Post-Contact Coalescent variant, Bad River phase (protohistoric Arikara). The limited technological diversity exhibited by the artifact sample suggests this component served some special purpose or function. Available data are insufficient to positively assign the component to a recognized settlement type, but it could represent a location (specialized activity area) or possibly even a field camp. The location interpretation is preferred here because the proximity of a number of permanent villages to the Sitting Buzzard site may have obviated the the need to establish a field camp at this location.

The Post-Contact occupants of Sitting Buzzard are thought to have been a special-purpose task group that was operating out of some nearby village. Low bone debris densities and the absence of semipermanent dwellings preclude a hunting camp interpretation similar to that reported at the Fire Heart Creek site (Lehmer 1966). It is unclear what specific resources might have been

exploited from the site by the task group, but the location of the site suggests that various bottomland resources are a likely possibility.

Plains Village Tradition Villages

The presence of suspected dwellings (houses) was confirmed at three of the eight tested sites. All three sites, Antelope Dreamer (39LM146), Buzzing Yucca (39LM166), and Ghost Lodge (39ST120), functioned as residential bases (earthlodge villages) for Plains Village tradition groups. However, the specific characteristics of these three sites are quite different from one another, which is not unexpected since the sites were occupied by groups of people from three different Plains Village variants at different points in time over a span of some 500 years. Antelope Dreamer, by far the largest of the three villages in terms of potential population, was a late Initial Middle Missouri village occupied during the late A.D. 1200s (ca. cal. A.D. 1270); Buzzing Yucca was a rather small Extended Coalescent village (ca. A.D. 1500-1675); and Ghost Lodge village was occupied by a small Post-Contact Coalescent, Bad River phase (Arikara) group sometime during the late A.D. 1700s (ca. A.D. 1780).

The Antelope Dreamer Village. Antelope Dreamer was a comparatively large earthlodge village of the Initial Middle Missouri variant. Its location atop a high ridge or hill in the midst of rugged Missouri Breaks terrain strongly suggests a defensive posture, although other evidence of a fortified position, such as a ditch and palisade, is presently lacking. Most artifacts were associated with the house remains. The lack of substantial extramural midden accumulation indicates a relatively brief occupation span of perhaps only a few years. The short-term nature of the occupation and the defensive positioning of the village suggest that its occupants were under considerable outside pressure, most likely from other Plains Village groups, and quite possibly groups of the Initial Coalescent variant.

A large sample of material was collected from the Antelope Dreamer site, representing the largest collection from any of the eight tested sites reported here. Subsistence data indicate a mixed economy based on hunting, gathering, and horticulture. Bison was the primary quarry identified in the faunal sample; a number of other species of large, medium, and small mammals are also represented, but to a far lesser degree. The preponderance of bison among the identifiable bone is fully expected and typical of most all Middle Missouri village assemblages. The variety of wild and edible plants identified in flotation and other samples from the site is truly amazing. Clearly, the Initial Middle Missouri occupants of Antelope Dreamer made use of virtually every edible species of wild plant that was locally available to them. Identified cultigens include corn and sunflower. Other common domesticated species such as beans, squash, and tobacco were not identified in the samples, but this is probably a reflection of limited sampling rather than the actual absence of such cultigens at the site. The abundance of grinding/crushing tools in the stone tool sample also points to extensive use of plant foods. Shell fish (mussels) are present as a very minor subsistence and/or technological resource.

Extensive use was also made of nonedible plants for building materials. Both juniper and cottonwood were used as posts and beams in earthlodge construction. Grasses and rushes were identified in the remains of materials that once covered the wooden superstructures of the houses at the site. These structures were rectangular, semisubterranean, and covered by a thick blanket of earth. Two kinds of rectangular earthlodges may be represented at the site. The first kind of house was the most conspicuous. It occupied a pit that was deeply dug beneath the level of the former occupation surface, leaving a distinct surface depression. These deep houses can be truly thought of as semisubterranean. The pit of the second kind of house was only shallowly dug beneath the former occupation surface. The existence of both deep and shallow houses at the site remains unexplained and requires additional research.

The presence of Sanford ware in the Antelope Dreamer ceramic assemblage suggests some sort of relationship to the Over focus, particularly the recently defined Lower James phase (Alex 1981). A "diamond eye" design found on the shoulder of an unusually well made Cable ware vessel (Anderson Tool Impressed type) indicates a definite stylistic link between the occupants of Antelope Dreamer village and village sites of the Lower James phase, especially the Mitchell site. It is possible that this vessel was a trade piece that came directly from a Lower James phase village, perhaps even the Mitchell site itself.

Lithic raw material utilization patterns show a primary reliance on locally available stone types. Lesser numbers of various nonlocal lithic types are also present in the samples, consisting of materials from the northern, western, and southern resource groups, including smooth gray Tongue River silicified sediment, Knife River flint, Flattop chalcedony, plate chalcedony, and Bijou Hills silicified sediment. Knife River flint is the most common nonlocal lithic type, as well as the second most popular type of all the recorded raw materials. A high percentage of Knife River flint is characteristic of most other Middle Missouri tradition collections (Ahler 1977a; Johnson 1984a). No clearly exotic, nonlocal lithic materials (e.g., obsidian) are represented which would indicate long-distance trade relationships that extended well beyond the Middle Missouri subarea. All of the other nonlocal lithic materials are commonly found in late prehistoric assemblages in the Big Bend region. Such materials could have been acquired either through a regional (subarea-wide) trade network, operating within and around the Middle Missouri subarea, or through direct acquisition by specialized task groups working beyond the Big Bend region proper.

The only clearly exotic, nonlocal material of any kind that was identified in the site collection and would indicate truly long-distance trade relations is a single modified shell artifact (family Neritidae[?], cf. Anculosa/Leptoxis sp.), which is thought to have come from some source in the southeastern United States. This specimen presents us with an interpretive problem, however, because it is not directly relatable to the village component at Antelope Dreamer. Nevertheless, similar exotic shell specimens (Anculosa/Leptoxis sp.) are documented in other nearby Initial Middle Missouri villages of the Grand Detour phase (Caldwell and Jensen 1969:68), and a few other marine shells (e.g., Busycon sp.) originating in the Southeast have also been identified in Initial Middle Missouri collections (Lehmer 1971:95).

In terms of resource territoriality, what we see for Initial Middle Missouri peoples from the perspective of the Antelope Dreamer village is a subsistence economy that is first and foremost oriented on the exploitation of local resources, a secondary concern with resources in the Missouri Valley in general and the nearby upland Plains, and a tertiary interest in resources beyond the Missouri Valley, especially in the Big Badlands and Black Hills areas of southwestern South Dakota. If one wishes to speculate on cultural interaction with other peoples located beyond the Lake Sharpe/Big Bend area proper, components of the Over focus and the Lower James phase of southeastern South Dakota seem to be the best candidates for direct relationships, and to a far lesser degree the Mill Creek culture of northwestern Iowa. A direct connection with peoples (Extended Middle Missouri variant?) to the north of the Big Bend region can also be seen in the use of quantities of Knife River flint, which is found in abundance in west-central North Dakota. The obvious movement of Knife River flint in a general north to south direction within the Middle Missouri subarea among Middle Missouri tradition peoples is likely a reflection of the operation of a subarea-wide trade network at this time. Indirect, long-distance contacts with Mississippian culture in the Midwest and Southeast are also be in evidence, but these seem to have been of comparatively minor importance, and were most likely limited to the trade of a few exotic artifacts and materials in a complicated down-the-line fashion involving great distances and many intermediary groups. However, the ideas that may have moved along with these seemingly minor luxury items could have been a very influential yet intangible commodity.

Certain other questions have also been raised regarding comparisons between the subsistence practices of Middle Missouri and Coalescent tradition populations. The first is rather specific and deals with the idea that Initial Coalescent villagers relied more on wild plant foods than did their Initial and Extended Middle Missouri counterparts. The available evidence indicates that this was clearly not the case. Evidence of the use of a wide variety of edible wild plants was found for the Initial Middle Missouri villagers at Antelope Dreamer, as reported here. Direct evidence of cultigens such as corn and sunflower was also found at this village site. Furthermore, the Antelope Dreamer findings compare favorably with the data on wild plant food utilization by Extended Middle Missouri peoples at the Travis I village site (Haberman 1982). By way of contrast, little or no evidence for wild plant food utilization was found for the Initial Coalescent villagers at the Whistling Elk site (39HU242), while the remains of such cultigens as corns and beans were found in relative abundance (Steinacher 1984). From these limited data, one might infer that it was the Initial Middle Missouri populations who made greater use of wild plant foods, rather than the Initial Coalescent peoples. In point of fact, the present date base is too meager to answer such questions with any reliability, but, nevertheless, it is my opinion that the basic subsistence practices of these village groups did not differ in any significant way. This statement also provides an answer, albeit a speculative one, to the second question which is related to the first: Did Initial Coalescent variant and Middle Missouri tradition peoples practice fundamentally different subsistence strategies? As already noted, it is my impression that they did not.

The Buzzing Yucca Village. Buzzing Yucca was a small earthlodge village occupied by people of the Extended Coalescent variant. The site probably only contained three houses that were located in a dispersed fashion near the shoreline. Debris from the village occupation covers a much larger area inland from the house locations. The remarkable thing about the Buzzing Yucca village is its apparently small population and location in an out of the way place. Another Extended Coalescent village (39LM206) was recorded by the SIRBS just to the northwest of Buzzing Yucca near the former mouth of Cedar Creek. It is possible, even likely, that the village occupation at site 39LM206, which is now completely inundated by Lake Sharpe, was related in some way to that at Buzzing Yucca.

The site exhibits generally low artifact densities and little or no extramural midden accumulation, factors suggesting that it was not occupied for any length of time, perhaps only a few years at most. In addition, the stone tool sample has a limited number of technological and functional forms by way of comparison to other villages. This, combined with a relative abundance of ceramics, suggests that the site may have served some special purpose function exclusive of a residential base, and that special purpose may have had something to do with ceramic manufacture. At a minimum, the artifactual data do suggest that only a limited range of activities were carried out at this location. One can speculate that the Buzzing Yucca site may have been occupied by a small group of individuals from the nearby 39LM206 village in order to conduct a few specific tasks, possibly of a restrictive or secretive nature. As intriguing as such speculations might be, additional research is required to confirm their validity. The site could just as easily represent a small but "typical" Extended Coalescent residential base, which only seems to have had a specialized function due to sample biases resulting from the limited extent of the excavations reported here.

The few subsistence data that are available from the site reflect a mixed economy based on hunting, gathering, and horticulture. Both plant and animal resources were used for food and as sources of raw material for the manufacture of tools, facilities, and other items. Exploited animal resources include various species of both large and small mammals; bison appears to have been the preferred quarry. Shell fish (mussels) are present as a very minor subsistence and/or technological resource. The plant resources used at the site consist of both wild and domesticated species. The only positively identified cultigen is corn.

The ceramic assemblage from the site consists of various Talking Crow, Iona, and La Roche types. These types are characteristic of Extended Coalescent variant components in the project area, and there is presently no firm foundation from which to infer outside relationships for groups of the variant based on ceramic similarities.

Lithic raw materials used in the manufacture of chipped stone tools show a primary reliance on locally available materials. Lesser numbers of various nonlocal lithic types are also present in the chipped stone samples, consisting of raw materials from the northern, western, and southern resource groups, including smooth gray Tongue River silicified sediment, Knife River flint, Flattop chalcedony, plate chalcedony, and Bijou Hills silicified sediment. Bijou Hills silicified sediment and Flattop chalcedony are the most common nonlocal lithic types, which is typical of most other Extended Coalescent assemblages (e.g., Ahler 1977a; Johnson 1984a; Toom 1984a). No

clearly exotic nonlocal materials such as obsidian are represented which would indicate long-distance trade relationships extending well beyond the study region. All of the nonlocal lithic types are common elements of late prehistoric collections in the Big Bend region. Such materials could have been acquired either through a regional (subarea-wide) trade network, operating within and around the Middle Missouri subarea, or through direct acquisition by special task groups working beyond the Lake Sharpe area proper.

In regard to resource territoriality, a picture emerges for the Extended Coalescent component at Buzzing Yucca that is similar to that painted above for the Initial Middle Missouri component at Antelope Dreamer, with one very important exception. The greatly reduced incidence of Knife River flint in the Buzzing Yucca lithic samples indicates much weaker ties to the north at this time, possibly even the complete breakdown of the subarea-wide trade network that was proposed for earlier Middle Missouri tradition peoples who controlled virtually all of the Missouri Valley in the Dakotas at one time. The emergence of Coalescent tradition peoples in the southern portion of the Middle Missouri subarea beginning sometime around A.D. 1300, replacing or even displacing the older Middle Missouri tradition population that was withdrawing to the north, seems to have disrupted the old trade network, halting the flow of Knife River flint from the north to the south. The lack of Knife River flint in the southern Coalescent sites in any appreciable quantities also suggests that amicable trade relations were not established between the intrusive southern Coalescent populations and the older Middle Missouri populations now residing exclusively in the north by Extended Coalescent times.

The Ghost Lodge Village. The village component at Ghost Lodge is unique unto itself and it is not readily interpretable in a conventional manner. The results of the test excavations reported here have raised many questions and provided few answers. We do know that the village component represents a short-term occupation by a relatively small group of Post-Contact Coalescent villagers affiliated with the Bad River phase. The protohistoric Bad River phase is directly linked to the historically known Arikara tribe, so the occupants of the village component at Ghost Lodge were in all probability members of an Arikara band. Radiocarbon dates, comparative artifactual analyses, and other temporal-cultural information indicate a date of occupation during the late A.D. 1700s, possibly during or immediately following the A.D. 1780-1781 smallpox epidemic.

A standard interpretation of the data suggests that the Ghost Lodge village component functioned as a semipermanent Arikara field camp. The houses at the site are definitely not like the large, substantial earthlodges that are typically found at permanent Arikara village sites. Rather, the dwellings at Ghost Lodge appear to be small, semipermanent structures similar to the conical earthlodges or hunting lodges reported at the Fire Heart Creek site, which is interpreted as an Arikara hunting camp (Lehmer 1966). This architectural association immediately suggests that the Ghost Lodge village functioned as a hunting camp or, in the terminology used here, a field camp. However, the low density of bone debris at the site does not support such an interpretation.

Nevertheless, the village probably did serve as some sort of temporary residential base for a small group of Arikara. One can only speculate as to why such an occupation was established at this location. The estimated date of occupation encompasses the well documented smallpox epidemic of A.D. 1780-1781, which had a particularly disastrous impact on the Post-Contact Coalescent villagers. The severe inroads of this epidemic on the Arikara population base forced the survivors to abandon the Big Bend region and withdraw up river to the Bad-Cheyenne region where they established two villages with other surviving Arikara near the mouth of the Cheyenne River (Krause 1972:14; Lehmer 1971). It is entirely possible that the village at Ghost Lodge was occupied temporarily by remnants of the Big Bend Arikara just prior to their removal upriver, since the available data do not appear to support an occupation by a special-purpose task group. The degenerative form of chipped stone tool technology that is inferred for the component, as well as the overall poor quality of the ceramic remains, would seem to lend further credence to a post-epidemic occupation.

Another intriguing aspect of the village component at Ghost Lodge is its potential relationship to the nearby Bloody Hand site (39ST230), a probable Post-Contact Coalescent village occupation located approximately 1 km upstream from Ghost Lodge. The Bloody Hand site represents a permanent residential base (a permanent earthlodge village), but seemingly low artifact densities suggest that this village, too, was occupied only briefly. It is possible that a small band of Arikara established a temporary settlement at the Ghost Lodge site in order to be near the larger Arikara village at Bloody Hand for purposes of mutual support and protection before moving in mass upriver to the Cheyenne River area. However, it is presently not possible to demonstrate a definite link between the two sites, nor is it possible to do more than speculate on the roll that these sites may have played in the abandonment of the Big Bend region by the Arikara sometime after A.D. 1780. Additional research along these lines could be productively pursued at both the Ghost Lodge and Bloody Hand sites.

Late Plains Woodland Burial Mounds

The burial mounds identified at the Windy Mounds (39LM149) represent a site type (earthen tumuli) and phenomena that is unique to the Plains Woodland tradition. No other archeological taxon in the project area or the wider study region is known to have buried at least a few of their dead in this manner, with such obvious care and expenditure of effort. This surely implies a higher level of social organization than was present among earlier prehistoric populations. We therefore have the suggestion that Plains Woodland peoples may not have been native to the Middle Missouri subarea, rather, they may have been immigrants from the Eastern Woodlands who occupied much of the study region during this period. Mound burial is not a characteristic of the succeeding Plains Village tradition, which minimally indicates considerable culture change from one tradition to the next, and may even indicate another turnover in basic population.

Late Plains Woodland Field Camp

Significant archeological components identified at the Sitting Buzzard (39ST122) site include at least one brief occupation by a small group affiliated with the late Plains Woodland tradition. The limited technological diversity exhibited by the late Woodland artifact sample suggests the occupation served some special purpose or function. Available data are insufficient to positively assign the component to a recognized settlement type, but it may have been a field camp or possibly a station (information gathering site). A field camp interpretation seems to be the most plausible alternative in view of the apparent absence of any other nearby residential bases from which Woodland task groups might have operated. In this regard, the site may have functioned as a temporary residential base for the extraction of local resources. On the other hand, the site could have merely served as a brief stopover point on the way to some other location. Whatever the case, the refitting and maintenance of projectile weapons (arrows) was a conspicuous activity of the late Plains Woodland occupants of the site. Perhaps this reflects a group of hunters passing the time at a station while they were waiting for indications of game.

Environmental Reconstruction

Species identifications of specimens in the limited ecofactual samples collected from the eight tested sites are consistent with local faunal and floral communities that prevailed in the project area during Late Holocene and into recent times. Thus, these identifications only serve to confirm what is already known about paleoenvironmental conditions in the project area during the Late Holocene period, with one notable exception. The diversity of the wild plant remains associated with the Initial Middle Missouri component at the Antelope Dreamer village does hint at a somewhat improved environmental setting, or at least an environmental setting where a wide variety of plants was able to flourish. While one can argue that this finding could be nothing more than a fluke of sampling, it is equally difficult to ignore its potential paleoenvironmental implications. This admittedly meager evidence for an improved local climate during Initial Middle Missouri times is supported by geomorphologic and pedologic data that are considered next.

Another piece of evidence that may be of some use in refining our current understanding of local paleoenvironmental conditions is the recognition of a prominent buried soil in the project area which was informally named the "Big Bend paleosol" in a previous report (Toom 1989b). A very prominent buried A horizon, referred to as the "Big Bend A," marks the former surface(s) of the Big Bend paleosol. Generally speaking, the Big Bend A is recorded as a series of cumulative Abk horizons in the upper solum (loess cap) of the low-lying MT-2 terrace. Preliminary indications are that the late Plains Woodland component at the Sitting Buzzard (39ST122) site is associated with the base of the Big Bend A, while the Initial Middle Missouri component at the Antelope Dreamer site is associated with the surface or near surface of the Big Bend A. At Antelope Dreamer the unit interpreted as the Big Bend A is recorded as only a single Abk horizon, which makes the association somewhat tenuous. The geomorphic setting of the Antelope Dreamer site on a high hill top in the Breaks as opposed a lower MT-2 terrace location is thought to account for this

variation. The limited stratigraphic exposures that were available for study at Antelope Dreamer (only a few small hand-excavated test units) has also made precise interpretation difficult.

These preliminary stratigraphic correlations with the Big Bend A have significant paleoclimatic implications nonetheless. Existing depositional models (e.g., Clayton et al. 1976; Coogan 1987) indicate that periods of comparative geomorphic stability, which are marked by episodes of soil formation, are linked to relatively mesic (moist) climatic conditions. The period of maximum development or stability for the Big Bend A is estimated at at least 250 years, from ca. A.D. 1000-1250 and possibly somewhat earlier, on the basis of radiocarbon dates and stratigraphic correlations with certain early Plains Village components. This time frame is generally equatable with the Neo-Atlantic climatic episode (ca. A.D. 700-1100), a time of very favorable (optimal) climatic conditions in the region. The preceding Scandic episode (ca. A.D. 300-700) is described as a transition period between the moister conditions that prevailed during the Neo-Atlantic and the general climatic deterioration that is proposed for the Sub-Atlantic episode (ca. 800 B.C.-A.D. 300). The Pacific episode (ca. A.D. 1100-1550), which succeeded the Neo-Atlantic, witnessed a return to generally drier conditions (Wendland 1978:281).

The age of the late Plains Woodland component at Sitting Buzzard is estimated at ca. A.D. 600-1000. So, in terms of previously defined climatic episodes, it would straddle the Scandic and Neo-Atlantic episodes. The stratigraphic correlation of the late Plains Woodland component at Sitting Buzzard with the base of the Big Bend A suggests an actual association with the Scandic episode. The development of the lower portion of the cumulative Abk horizon at the site does indicate somewhat improved climatic conditions over those that prevailed during the Sub-Atlantic episode, but nothing approaching the more optimal conditions inferred for the Neo-Atlantic when the upper portion of the cumulative Abk would have formed and stabilized. The more mesic conditions posited for the Neo-Atlantic climatic optimum would then correlate stratigraphically with the surface of the Big Bend A, which is the approximate stratigraphic position observed for the Initial Middle Missouri component at the Antelope Dreamer site.

On the basis of these few observations, the late Plains Woodland tradition can be tentatively linked to a somewhat improved local climate during the Scandic episode, but not to the really marked improvement in local conditions that most likely occurred during the Neo-Atlantic episode. The Neo-Atlantic climatic optimum is best correlated with the early Plains Village tradition, especially the Initial Middle Missouri variant, and possibly the very terminal phases of the Plains Woodland tradition. By the same token, it is also possible to relate the development of the Plains Woodland and Plains Village traditions in the region to a gradually improving local climate. Extending this reasoning one step further, one can begin to see that improved climatic conditions may in part account for the transition from Plains Archaic to Plains Woodland to Plains Village lifeways in the region, a process that began at about the time of Christ or perhaps a little earlier and was essentially complete by about A.D. 1000.

Our final piece of paleoenvironmental data comes from the Ghost Lodge site where a radiocarbon date was obtained on a bison bone element found embedded in a thick unit of colluvial clay in the lower elevations of the Missouri Breaks zone. Massive deposition of colluvium in the Breaks zone is associated with periods of low vegetation and hillslope instability which are in turn linked to relatively xeric (dry) climatic conditions in the region (cf. Clayton et al. 1976; Coogan 1987). The age of this specimen, estimated at ca. 400 B.C. by radiocarbon dating (see Section XIII), indicates that a drier climatic, perhaps even a period of severe drought, prevailed at this time. The date placed on this somewhat drier local climate corresponds nicely with the general climatic deterioration that is proposed for the Sub-Atlantic episode (ca. 800 B.C.-A.D. 300). It also falls within the estimated time frame of the Late Plains Archaic tradition in the region (ca. 1500-1 B.C.).

XV. NATIONAL REGISTER EVALUATIONS AND MANAGEMENT RECOMMENDATIONS

Introduction

In this section of the report, the significance of the eight tested sites is specifically evaluated according to National Register of Historic Places criteria. In addition, management recommendations are made for those sites considered to be eligible for listing on the National Register of Historic Places. The development of detailed impact mitigation plans is not possible within the scope of this research because such planning requires more information than is ordinarily obtainable from testing projects whose sole purpose is an evaluation of National Register eligibility. However, some recommendations are made regarding the mitigation of adverse impacts at significant archeological sites.

Under present guidelines, an evaluation of the significance of a cultural resource centers on considerations of historic context (NPS 1986). As of this writing, a comprehensive statement on historic contexts for archeological sites in the state of South Dakota is not yet available (John Rau, SDHPC, personal communication 1989). Therefore, the sites under study here will be principally evaluated according to research domains and topics discussed in the Big Bend Multiple Resource Area nomination report (Steinacher and Toom 1985). Reference can also be made to an earlier draft version of the State Plan (Buechler 1984) for research topics of relevance to certain sites. The Big Bend Multiple Resource Area is equivalent to the Lake Sharpe project area. The research domains that are identified in the Big Bend Multiple Resource Area nomination are similar in concept and intent to historic contexts, and they serve as the basis for the site evaluations that follow.

Plains Village Tradition Sites

In terms of historic context, the Plains Village period/tradition, as it was manifest in that portion of the Middle Missouri subarea of the Plains in South Dakota, is identified in the Big Bend Multiple Resource Nomination as a key research domain of unrivaled importance to scientific archeological pursuits. The scientific research value of Plains Village tradition sites is highly significant and quite varied (Steinacher and Toom 1985:1-47-50). The significance and variability of Plains Village archeology is a direct reflection of the complexities of Plains Village culture in the the study region (cf. Lehmer 1971). Recorded site types include: earthlodge villages, isolated earthlodges, campsites, various specialized activity areas, and cemeteries. General research topics of regional importance identified for the Plains Village tradition include: (1) refinements of culture history, (2) more detailed reconstructions of past lifeways, and (3) the study of the cultural evolutionary processes (Steinacher and Toom 1985:1-61-64). More specifically, Plains Village sites have a demonstrated potential to increase our knowledge of cultural chronology and variability, cultural interaction and trade, social organization, settlement-subsistence patterns, paleoenvironmental conditions, and cultural ecology within the project area from ca. A.D. 1000-1780.

Steinacher and Toom (1985:1-50-51) use a blanket approach in assessing the significance of Plains Village sites in the Big Bend Multiple Resource Area. This approach is based on the fact that dam and reservoir construction by the U.S. Army Corps of Engineers after World War II has resulted in the wholesale destruction of Plains Village archeological sites. They estimate that only about 25% of the original Plains Village resource base remains intact and available for study today in that portion of the Middle Missouri subarea in South Dakota. Therefore, all remaining Plains Village sites in the project area that retain some degree of integrity are considered to be significant archeological resources, regardless of their type or age, because of this unprecedented level of site destruction.

West Bend (39HU83)

The West Bend site has been positively identified at a minimum as a special activity location affiliated with the Extended Coalescent variant (ca. A.D. 1500-1675) of the Plains Village tradition. The site principally functioned as a final processing location for animal products, mainly bison, derived from nearby kill/butchering sites. It is also likely that plant resources were collected and processed at the site. At a maximum, the site could have served as a field camp (temporary residential base) for Extended Coalescent task groups operating beyond the confines of their permanent villages. The available data are insufficient to support or refute a field camp interpretation at this time.

National Register Evaluation. The West Bend Site is eligible for listing on the National Register under criterion D: archeological sites "that have yielded, or may be likely to yield, information important in prehistory or history" (NPS 1986:1). As a specialized activity location, the West Bend site has a demonstrated potential to generate information of importance to the reconstruction of Plains Village lifeways. It offers a rare opportunity to study a little known Plains Village site type--the location--which was undoubtedly an important component of Plains Village settlement-subsistence patterns. Most recorded and extant Plains Village sites in the project area are earthlodge villages. Specialized activity locations like West Bend are comparatively rare in the cultural resources inventory of the project area, and few have received much attention in past research efforts. The apparent rarity of Plains Village location sites in the project area is difficult to explain, but it is thought to relate principally to past survey biases, the relatively low archeological visibility of such sites, and the inundation of the Missouri River bottoms where most of these sites may have been located. In any event, the West Bend site represents a rather unique archeological resource with significant scientific research potential.

More detailed definition of the Extended Coalescent variant, especially in terms of chronology and possible ethnic affiliation, is a direction for future research identified by Buechler (1984). For example, Hoffman (1963, 1967) has speculated that the Extended Coalescent variant may represent both ancestral Arikara and Pawnee populations. The archeological remains preserved at the West Bend site have the potential to contribute toward a better understanding of the Extended Coalescent as a whole, including questions of chronology and ethnicity.

On the basis of these factors, the West Bend site is considered to be eligible for listing on the National Register of Historic Places.

Management Recommendations. The West Bend site has been impacted to some extent by the construction of camping facilities in the West Unit of the West Bend Recreation Area. It is estimated that as much as 25% of the site area has been substantially compromised by the camping facilities, but this still leaves the majority of the site area more or less intact and available for study. It is thought that the campground and the archeological site can coexist without much further impact to the site if expansion of the camping facilities is strictly prohibited within the site, and improvements of existing facilities are limited to already built and disturbed areas. Other than taking appropriate preservation measures like those suggested here, no further work is recommended for the site.

Antelope Dreamer (39LM146)

The Antelope Dreamer site has been positively identified as an earthlodge village of the Initial Middle Missouri variant (ca. cal. A.D. 1270) of the Plains Village tradition. The site functioned as a permanent residential base for a sizable Initial Middle Missouri population during the closing years of the variant. It can be used an important research tool for the study of Initial Middle Missouri lifeways and, potentially, the reaction of Initial Middle Missouri peoples to the influx of Initial Coalescent groups into the area that is thought to have begun to occur by at least A.D. 1300. As with most village sites, it contains a highly diverse artifactual content consisting of ceramic, stone, and bone artifacts, an abundance of faunal and floral remains including both wild and domesticated plant foods, features such as storage pits and hearths, and the remains of rectangular earthlodge structures (houses).

National Register Evaluation. The Antelope Dreamer site is eligible for listing on the National Register under criterion C: archeological sites "that embody the distinctive characteristics of a type, period, or method of construction" (i.e., architectural remains); and criterion D: archeological sites "that have yielded, or may be likely to yield, information important in prehistory or history" (NPS 1986:1). As a permanent residential base (village), there is no question that the site has a demonstrated potential to generate information of importance to enhancing our understanding of most any aspect of Plains Village lifeways. While other Initial Middle Missouri villages are preserved in the area, each was occupied by an aggregate of people representing a unique segment of Initial Middle Missouri society at a particular point in time, so, theoretically, each individual village represents a unique and irreplaceable piece of the archeological record that is not duplicated elsewhere. This unique sociocultural grouping that one can attribute to all village sites makes each a significant archeological resource. Furthermore, Antelope Dreamer remains in essentially pristine condition except for the relatively minor destruction caused by the archeological test excavations reported here. The same statement cannot be made of most other extant Initial Middle Missouri villages in the region. Another unique aspect of the site is its unusual setting in the Missouri

Breaks zone, some distance away from critical resources, in a location that was obviously selected first and foremost for its defensibility.

An examination of the external and internal relations of Initial Middle Missouri sites is a primary research topic identified by Buechler (1984) that can be approached to some degree by the archeological remains preserved at Antelope Dreamer village. More specifically, the data generated by additional archeological excavations at this site would have the potential to elucidate internal relationships between and among sites of the Grand Detour phase (Caldwell and Jensen 1969). Data relevant to the evaluation of hypothesized external relationships of Grand Detour phase sites with sites of the Over focus (Hurt 1951b), the Lower James phase (Alex 1981), and the Mill Creek culture (Anderson 1987; Tiffany 1983) would also probably be forthcoming.

Another research topic of particular relevance to Antelope Dreamer concerns questions that have been raised about the emphasis placed on wild versus domesticated plant foods between certain Coalescent and Middle Missouri tradition populations (Buechler 1984). For example, it has been proposed that Initial Coalescent variant peoples relied more on wild plant foods than did their Middle Missouri counterparts (Initial and Extended variants). The related question of whether Initial Coalescent variant and Middle Missouri tradition subsistence strategies were fundamentally different has also been raised. Data from the Antelope Dreamer site could have a significant bearing on the resolution of these important issues. The site may be particularly important as a source of information on plant food utilization by Initial Middle Missouri peoples in view of the documented presence of well preserved (burned) plant remains.

For these reasons, among others, the Antelope Dreamer village is considered to be eligible for listing on the National Register of Historic Places.

Management Recommendations. The Antelope Dreamer site is essentially stable and has not been impacted to any appreciable degree by modern development. The only impacts that can be noted are minor erosion along the western and southern site margins, and a two-track dirt road that runs through and terminates at the site. Other than these minor impacts and our limited archeological excavations, the site remains in pristine condition. Our only recommendation is that it should be maintained in this manner.

Buzzing Yucca (39LM166)

The Buzzing Yucca site was positively identified as a small earthlodge village of the Extended Coalescent variant (ca. A.D. 1500-1675) of the Plains Village tradition. The site probably functioned as a permanent residential base for a small Extended Coalescent population, but there is some suggestion that it may have served some special purpose or function that could have been related to the occupation at a larger Extended Coalescent village that was located nearby (i.e., 39LM206). The remains of no more than three round earthlodges (houses) were identified at the site, placed in a dispersed fashion on flat spots adjacent the shoreline. The site itself is recorded as a much larger area that extends for a considerable distance inland into the

lower elevations of rugged Missouri Breaks terrain. This larger site area contains a light to moderate debris scatter related to the village occupation.

National Register Evaluation. The Buzzing Yucca site is eligible for listing on the National Register under criterion C: archeological sites "that embody the distinctive characteristics of a type, period, or method of construction" (i.e., architectural remains); and criterion D: archeological sites "that have yielded, or may be likely to yield, information important in prehistory or history" (NPS 1986:1). As a permanent residential base (village), there is no question that the site has a demonstrated potential to generate information of importance to enhancing our understanding of most any aspect of Plains Village lifeways. While other Extended Coalescent villages are preserved in the area, each was occupied by an aggregate of people representing a unique segment of Extended Coalescent society at a particular point in time, so, theoretically, each individual village represents a unique and irreplaceable piece of the archeological record that is not duplicated elsewhere. This unique sociocultural grouping that one can attribute to all village sites makes each a significant archeological resource. Furthermore, Buzzing Yucca remains in essentially pristine condition except for the relatively minor destruction caused by the archeological test excavations reported here. The same statement cannot be made of most other extant Extended Coalescent villages in the region. Another unique aspect of the site is its small size in terms of number of houses and potential population, and its unusual setting in an out of the way place in a low-lying area of the Missouri Breaks zone.

More detailed definition of the Extended Coalescent variant, especially in terms of chronology and possible ethnic affiliation, is a direction for future research identified by Buechler (1984), as discussed previously for the West Bend site. The archeological remains preserved at the Buzzing Yucca site have an even greater potential to contribute toward our overall understanding of the Extended Coalescent, including insights into questions of chronology and ethnicity.

For these reasons, among others, the Buzzing Yucca village is considered to be eligible for listing on the National Register of Historic Places.

Management Recommendations. The Buzzing Yucca site is essentially stable and has not been impacted to any appreciable degree by modern development. The only impacts that can be noted are some minor erosion along the shoreline at the site, which does not appear to be active owing to the presence of Pierre Shale bedrock, some deflation of the debris scatter in certain places as a result of surface erosion, and our limited archeological excavations. Surface erosion is particularly evident on the steeper slopes and along the short drainageways that head in the higher Breaks terrain and run through the site to the river. The locations of the house remains have not suffered from any of these minor impacts and they remain virtually undisturbed except for our few test excavations. Other than these rather minor impacts, the site remains in excellent condition and will probably continue to do so into the foreseeable future. Our only recommendation is that the site should be maintained in its present condition.

Ghost Lodge (39ST120)

The Ghost Lodge site has been positively identified as a small village affiliated with the Bad River phase (protohistoric Arikaras), Post-Contact Coalescent variant, Plains Village tradition. We do know that the site functioned as a residential base for a small group of Arikaras during the late A.D. 1700s. Indications are that the site may have been occupied during or immediately after the 1780-1781 smallpox epidemic. Beyond this, our investigations have raised more questions than answers about the site. The houses at the site, of which there could have been as many as six, are definitely not like the large, substantial earthlodges typically found at permanent Arikara village sites. Rather, the dwellings at Ghost Lodge appear to be small, semipermanent structures similar to the conical earthlodges or hunting lodges reported at the Fire Heart Creek site, which is interpreted as an Arikara hunting camp (Lehmer 1966). This association suggests that the Ghost Village might also have been a hunting camp (field camp), but the low density of bone debris at the site does not support such an interpretation.

National Register Evaluation. The Ghost Lodge site is eligible for listing on the National Register under criterion C: archeological sites "that embody the distinctive characteristics of a type, period, or method of construction" (i.e., architectural remains); and criterion D: archeological sites "that have yielded, or may be likely to yield, information important in prehistory or history" (NPS 1986:1). The site probably did function as some sort of temporary residential base for a small group of Arikaras, but at this juncture one can only speculate as to why such an occupation was established at this location. The estimated date of occupation encompasses the well documented smallpox epidemic of A.D. 1780-1781, which had a particularly disastrous impact on the Post-Contact Coalescent villagers, including the Arikara of the Big Bend region. The severe inroads of this epidemic on the Arikara population base forced the survivors to abandon the Big Bend region and withdraw northward upriver. It is entirely possible that the temporary village at Ghost Lodge was occupied by remnants of the Big Bend Arikaras just prior to their removal upriver, since the available data do not appear to support an occupation by a special-purpose task group. The degenerative form of chipped stone tool technology that is inferred for the component, as well as the overall poor quality of the ceramic remains, would seem to lend further credence to a post-epidemic occupation.

Another intriguing aspect of the village component at Ghost Lodge is its potential relationship to the nearby Bloody Hand site (39ST230), a probable Post-Contact Coalescent village occupation located approximately 1 km upstream from the Ghost Lodge site (Steinacher 1981; Steinacher and Toom 1985; Toom and Picha 1984). The Bloody Hand site represents a permanent residential base (a permanent earthlodge village), but seemingly low artifact densities suggest that this village, too, was occupied only briefly. It is possible that a small band of Arikaras established a temporary settlement at the Ghost Lodge site in order to be near the larger Arikara village at Bloody Hand for purposes of mutual support and protection before moving in mass upriver to the Cheyenne River area. However, it is presently not possible to demonstrate a definite link between the two sites, nor is it possible to do more than speculate on the roll that these sites may have played in the abandonment of the Big Bend region by the Arikara sometime after A.D. 1780.

It is possible that research into the impacts of the smallpox epidemic of 1780-1781 could be productively pursued at both the Ghost Lodge and Bloody Hand sites. This event was of singular significance in regional history, denying Plains Village peoples the hegemony that they had held over the Middle Missouri subarea for centuries, and allowing the ascension of the equestrian tribes who came to dominate the region well into the historic period.

Further examination of the variability within the Post-Contact Coalescent variant (i.e., phase definition), and whether this variability can be used to identify recognized Arikara subgroups, is yet another relevant research topic (Buechler 1984). The Post-Contact occupation at the Ghost Lodge site most certainly represents a small portion of this variability that could be productively studied by additional investigations.

On the basis of these factors, and because it represents an intact, potentially unique, and previously unknown kind of Plains Village site, the Ghost Lodge site is evaluated as eligible for listing on the National Register of Historic Places.

Management Recommendations. The bench in which the Ghost Lodge village is situated is being severely undermined by active subsurface erosion (tunnel gullying). Some lateral erosion of the bench is also occurring along intermittent stream channels that border the site on two sides, but the really adverse impacts to the site itself are from the extensive tunnel gullying in the bench. At least one house depression has already been more or less destroyed by this process, and the remaining structural features are clearly threatened. We believe that if this process of erosion continues unabated, the site could be essentially destroyed in a matter of years. Therefore, high priority impact mitigation measures are recommended for the site.

We propose that an extensive program of salvage excavation be conducted for the Post-Contact village component at the Ghost Lodge site. Stabilization of the site area is not a viable impact mitigation option, in terms of either practicality or cost effectiveness, given the nature and extent of the erosion processes in operation at the site. The salvage excavation program should consist of the complete excavation of at least three of the six potential structures represented at the site, as well as the excavation of some 300 m^2 of extramural block units in the vicinity of the structural remains. The unexcavated portion of House 2 (Feature 2) should definitely be included as one of the structures selected for complete excavation. The "core" of the village component is estimated to cover approximately 3000 m^2, so extramural coverage of about 300 m^2 would provide a ca. 10% sample of this area exclusive of the house excavations. It is essential that additional test excavations be conducted at the site prior to the commitment of substantial excavation effort in order to insure optimum block unit placement. It would also be advisable to dig a few test units in the western bench area of the site where some potential for additional cultural deposits of significance may exist.

Sitting Buzzard (39ST122)

The Plains Village component at the Sitting Buzzard site is affiliated with the Bad River phase (protohistoric Arikaras) of the Post-Contact Coalescent variant (ca. A.D. 1675-1780). The site most likely functioned as a special-purpose location used by Arikara task groups to exploit local bottomland resources.

National Register Evaluation. The Post-Contact component at Sitting Buzzard is eligible for listing on the National Register under criterion D: archeological sites "that have yielded, or may be likely to yield, information important in prehistory or history" (NPS 1986:1). As a specialized activity location, the site has the potential to generate information of importance to the reconstruction of Plains Village lifeways. It offers a rare opportunity to study a little known Plains Village site type--the location--which was undoubtedly an important component of Plains Village settlement-subsistence patterns. Most recorded and extant Plains Village sites in the project area are earthlodge villages. Specialized activity locations like Sitting Buzzard are comparatively rare in the cultural resources inventory of the project area, and few have received much attention in past research efforts. The apparent rarity of Plains Village location sites in the project area is difficult to explain, but it is thought to relate principally to past survey biases, the relatively low archeological visibility of such sites, and the inundation of the Missouri River bottoms where most of these sites may have been located. In any event, the Post-Contact component at Sitting Buzzard represents a rather unique archeological resource with significant scientific research potential.

Further examination of the variability within the Post-Contact Coalescent variant (i.e., phase definition), and whether this variability can be used to identify recognized Arikara subgroups, is another relevant research topic (Buechler 1984). The Post-Contact component at Sitting Buzzard may have something to offer toward this issue, as is also the case for the Ghost Lodge site discussed above.

On the basis of these factors, the Sitting Buzzard site is considered to be eligible for listing on the National Register of Historic Places.

Management Recommendations. Like the eastern bench at the Ghost Lodge site, which is a similar setting, the western bench at Sitting Buzzard where the Post-Contact component is located is subject to active subsurface erosion (tunnel gullying). Lateral erosion of the western bench has also occurred where it is bordered on the east side by an intermittent stream channel. The tunnel gullying in the western bench at the site, and to a lesser extent the lateral stream erosion, is a clear threat to Post-Contact component. Impact mitigation measures are recommended, the specifics of which are discussed below under the consideration of the late Plains Woodland component at the site.

Plains Woodland Tradition Sites

In terms of historic context, the Plains Woodland period/tradition, as it was manifest in that portion of the Middle Missouri subarea of the Plains in South Dakota, is identified as an important research domain or theme in the Big Bend Multiple Resource Nomination. The scientific research value of Plains Woodland tradition sites is also highly significant and varied, but its archeology is not as diverse as that of the succeeding Plains Village tradition (Steinacher and Toom 1985:1-43-46). The most commonly known Plains Woodland site types include burial mound (tumuli) and habitation (field camp) sites (e.g., Neuman 1975). A few specialized activity locations and/or field camps have also been recently recorded in the Lake Sharpe project area (e.g., Steinacher 1984b, 1984c; Toom 1984d, 1989b, this report).

The significance of Plains Woodland archeology relates in large part to the concept of the Plains Woodland period as a time of cultural innovation in study region. By all indications, many new technological, economic, and social elements were added to the adaptive strategies of regional prehistoric peoples at this time. These included such innovations as ceramics, semipermanent dwellings (and by inference semipermanent camps), the bow and arrow, elaborate mortuary practices, and perhaps horticulture (garden agriculture) (cf. Hoffman 1968; Neuman 1975; Wedel 1961). These innovations suggest a more complex and sedentary lifeway than was present during the preceding Plains Archaic period. Furthermore, all of these innovations, with the exception of mound burials, appear in more fully elaborated and developed forms during the Plains Village period, constituting integral parts of Plains Village lifeways. The development of these innovations and their placement within a regional evolutionary context, particularly with respect to the Plains Village tradition, is a primary concern of Plains Woodland tradition research in the Middle Missouri subarea. General research topics of regional importance identified for the Plains Woodland tradition are the same as those of the Plains Village tradition: (1) the refinement of culture history, (2) more detailed reconstructions of past lifeways, and (3) the study of the cultural evolutionary processes (Steinacher and Toom 1985:1-61-64). More specifically, Plains Woodland sites have a demonstrated potential to increase our understanding of cultural chronology and variability, cultural interaction and trade, social organization, settlement-subsistence patterns, paleoenvironmental conditions, and cultural ecology within the project area from ca. A.D. 1-1000.

Steinacher and Toom (1985:1-45-46) use a blanket approach in assessing the significance of Plains Woodland sites in the Big Bend Multiple Resource Area like that applied to Plains Village sites. The rationale for this approach is also the same and is based on the fact that many of the Plains Woodland sites that were once present in the region have been destroyed or were otherwise impacted by dam and reservoir construction activities following World War II. This massive destruction of Plains Woodland sites in the Middle Missouri subarea of South Dakota has left little of the original resource base intact and available for study today. It is estimated that only about 25% of the mound sites remain in a condition that is amenable to scientific study; the less well known habitation sites have experienced an even greater rate of destruction. Thus, all existing Plains Woodland sites in the project area are considered to be significant archeological resources, regardless of their type or age, because of these high levels of site destruction.

Windy Mounds (39LM149)

Combined geomorphological/pedological and archeological data have positively identified the two earthen mound features at the Windy Mounds as human-made constructs attributable to a presently unnamed manifestation of the late Plains Woodland tradition (ca. A.D. 600-1000). Furthermore, there is every reason to believe that these mounds cover the remains of one or more human burials. The presence of human remains was not confirmed directly by excavation or other means so as not to needlessly disturb any potential interments.

National Register Evaluation. The Windy Mounds site is eligible for listing on the National Register under under criterion C: archeological sites "that embody the distinctive characteristics of a type, period, or method of construction" (i.e., architectural remains); and criterion D: archeological sites "that have yielded, or may be likely to yield, information important in prehistory or history" (NPS 1986:1). Plains Woodland tradition burial mounds were once rather common in the Middle Missouri subarea of South Dakota. Such features and the sites containing them are considered to be significant resources because they represent the development of a complex behavior pattern and accompanying ideology previously unknown in the subarea; they also contain skeletal remains of importance to physical anthropological studies. Moreover, because they are Native American tumuli, mounds have a demonstrated humanistic value to local Indian groups (Steinacher and Toom 1985:1-45). Many of these features have been destroyed by dam and reservoir construction, cultivation, other construction projects, and archeological excavations. Therefore, all burial mounds are eligible for nomination to the National Register on the basis of sample considerations alone because they represent surviving examples of a greatly depleted and finite cultural resource site of importance to both anthropologists and Native Americans groups (Steinacher and Toom 1985:1-45-46). On this basis, the site is evaluated as eligible for listing on the National Register of Historic Places.

Management Recommendations. The site is generally in good condition, and it is not presently threatened by any major impacts. The two mounds have been impacted to some extent by a two-track dirt road that runs through the site and between the mounds, an old excavation into the center of one of the mounds, and the limited test excavations reported here. While the integrity of Mound 2 may have been compromised to an unknown degree by the old excavation into its center, Mound 1 remains virtually untouched and in excellent condition. We recommend that the site be maintained in its present condition. Vehicle traffic into the site should be restricted.

Sitting Buzzard (39ST122)

A component affiliated with an unnamed archeological taxon of the late Plains Woodland tradition (ca. A.D. 600-1000) was also positively identified at the Sitting Buzzard site. It is thought that this component may have functioned as a field camp or at least a station on one or more occasions for a small number of individuals. The area of this component that is preserved

at the site appears to very limited in extent, and what does remain of the component is threatened by both subsurface (tunnel gullying) and lateral (cutbank) erosion processes.

National Register Evaluation. The Late Plains Woodland component at Sitting Buzzard is eligible for listing on the National Register under criterion D: archeological sites "that have yielded, or may be likely to yield, information important in prehistory or history" (NPS 1986:1). As a potential field camp occupation or just a station, the late Plains Woodland component at the site can yield information of importance to the reconstruction of Plains Woodland lifeways. It offers a rare opportunity to study little known aspects of Plains Woodland culture, including settlement-subsistence patterns and, perhaps most importantly, local paleoenvironmental conditions. The late Plains Woodland component at the Sitting Buzzard site represents an archeological resource that is unique to the project area and, therefore of considerable scientific research potential.

The need to identify and investigate Plains Woodland habitation sites that correlate with the more commonly known burial mound sites has also been recognized by Buechler (1984). It is the lack of recorded and intact habitation sites that has been and continues to be a serious deterrent to further progress in Plains Woodland research in the Big Bend region (cf. Toom 1984b). The late Plains Woodland component preserved at the Sitting Buzzard site has the potential to somewhat alleviate this archeological deficiency.

On the basis of these factors, the Sitting Buzzard site is considered to be eligible for listing on the National Register of Historic Places.

Management Recommendations. Preservation of the late Plains Woodland component at Sitting Buzzard appears to limited to a small knoll located on low bench on the west side of an intermittent stream and adjacent to the stream cutbank. This knoll area is presently being laterally eroded by the stream, and it is threatened by subsurface erosion in the bench as well. If erosion of the site proceeds unabated, we believe that the knoll area containing the late Plains Woodland component could be completely lost within a decade. Stabilization of the site would seem to be neither practical nor cost effective, so a program of salvage excavation is recommended to mitigate the impacts of erosion on this component as well as the Post-Contact Coalescent component discussed previously.

Salvage excavations specifically targeted at the late Plains Woodland component should be given the highest priority because of its uniqueness. The area of the small knoll which contains this component (vicinity of Tests 3 and 4) is estimated to cover no more than about 1000 m^2. We recommend that as much as 500 m^2 or about 50% of the knoll area be excavated in block units in order to obtain a large sample of material from the late Plains Woodland component. During the course of these excavations, sufficient materials should be recovered from the Post-Contact component to enable the impacts to it to be adequately mitigated as well. If this does not prove to be the case, then we recommend that additional excavations aimed at the Post-Contact component be conducted in the vicinity of Test 2. The major salvage effort at the site should be preceded by additional testing in order to facilitate optimum block unit placement.

Insignificant Sites/Components

No particular significance can be attributed to two of the eight tested sites because (1) their components could not be identified with respect to definitive archeological taxa, (2) their artifactual content was found to be too ephemeral, and/or (3) their integrity was found to be highly if not completely compromised.

Betty Bite Off (39LM156)

It was not possible to positively assign the ceramic period components at the Betty Bite Off site to any definitive archeological taxa. It is thought that the site contains early and late Plains Village (i.e., Initial Middle Missouri and Extended Coalescent) components, that most likely functioned as specialized activity locations, but this could not be confirmed by the meager data that were generated by this testing effort. Therefore, the site and its components is evaluated as not eligible for listing on the National Register of Historic Places. No further work is recommended, except to suggest that the continued erosion of the cutbank at the site could be monitored periodically to check for the exposure of any substantial cultural deposits that might be present at the site and were not encountered by the testing reported here.

Cache Site (39ST121)

The archeological investigations conducted at the Cache site failed to reveal any evidence of substantial, intact archeological remains. By all indications, the cultural materials observed in the Lake Sharpe cutbank during the 1983 UND survey have been completely destroyed by shoreline erosion. The Cache site is, therefore, evaluated as not eligible for listing on the National Register of Historic Places. No further work is recommended for the site.

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